1509 Main Street, Suite 900
Dallas, Texas
75201-4809

214/744-1641

ICF TECHNOLOGY INCORPORATED

90068956

Memorandum

TO: Ed Sierra, Region VI RPO

THRU: K.H. Malone, Jr., FITOM

THRU: Tim A. Hall, ICF-AFITOM

FROM: Victor Cason, FIT Chemist

DATE: March 21, 1989

SUBJECT: Preliminary HRS Package for Goodson & Son Trucking, Channelview, TX. TDD# F-6-8809-30, CERCLIS# TXD981052475, PAN FTX0557HAA.

A preliminary HRS evaluation has been completed for Goodson & Son Trucking site in Channelview, Texas. The site consists of a low lying area filled with cement precipitator flue dust and is located in the 17300 block of Market Street, between U.S. Highway I-10 and Market Street. Approximately 4.6 acres are covered by the cement dust. Currently, the site consists of an office for Odeen Hibbs Trucking Company and a truck parking lot.

The cement precipitator flue dust was used for land improvement purposes, to raise the elevation of the property, and was placed at the site in 1979. Complaints from residents regarding the dust created during the dumping of the material were registered with the Harris County Pollution Control Department (HCPCD). On April 29, 1981 the HCPCD performed a site inspection and noticed high pH water on-site and in the runoff collected from the fill area.

The local telephone company had noted complaints from their field workers who performed line maintenance inside an underground work station beneath the fill area. Complaints included dizziness, headaches, nausea and chemical burns. On several occasions the workers had to pump a brown liquid out of the work station. An investigation by the telephone company which involved drilling several monitoring wells around the work station revealed high calcium concentrations and high pH water.

The FIT performed a site inspection on August 3, 1987, and again discovered high pH water in the north and south ditches around the site. A grab soil sample collected during the inspection contained several polynuclear aromatic compounds and high levels of calcium, magnesium, potassium and sodium.

On November 15, 1988, FIT collected eight water samples, seven soil samples and a sample of the fill material for full RAS analysis. Results from the samples revealed that high calcium, potassium and sodium concentrations were

present on-site and in the off-site runoff. Several soil samples contained 4,4'-DDT; however, the compound could not be attributed to the site.

The ground water within a 3-mile radius is used for domestic and industrial purposes. No sampling data for drinking wells have been collected to evaluate the possibility of an observed release. An observed release to surface water is substantiated by the sampling results. The metals calcium, potassium and sodium were found in the south drainage path in concentrations greater than five times the background sample. However, due to the proximity of the site to the Gulf of Mexico, no domestic water supply intakes are located downstream. Therefore, there is no target population for surface water.

On a preliminary basis, the Goodson & Son Trucking site does not meet the requirements for inclusion on the NPL.

Facility Name: Goodson & Son Trucking

Location: 17300 Market Street Channelview, TX

EPA Region: VI

Person(s) In Charge of the Facility: Kyle Goodson
15937 Ridlon
Channelview, TX

Name of Reviewer: Victor Cason[C] Date: March 17, 1989

General Description of the facility:
(For example landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

The site was a low lying area between U.S. Highway I-10 and Market Street which has been filled with cement precipitator flue dust. High pH water was noted in the drainage ditches to the north and south of the site. High concentrations of calcium, potassium and sodium were found in on-site and off-site samples. An observed release to surface water was scored; however, no target population exists. There are no well data available to determine a release to ground water.

Scores: S_M = 17.59 (S_{gw} = 29.93 S_{sw} = 5.45 S_a = 0)

S_{FE} = Not Evaluated

S_{DC} = Not evaluated

FIGURE 1

HRS COVER SHEET

Ground Water Route Work Sheet

Rating Factor		Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref Section
[1]	Observed Release	(0) 45	1	0	45	3.1

If observed release is given a score of 45, proceed to line [4].
If observed release is given a score of 0, proceed to line [2].

[2]	Route Characterisitics					3.2
	Depth to Aquifer of Concern	(0) 1 2 3	2	0	6	
	Net Precipitation	0 (1) 2 3	1	1	3	
	Permeability of the Unsaturated Zone	0 1 (2) 3	1	2	3	
	Physical State	0 1 (2) 3	1	2	3	
	Total Route Characteristics Score			5	15	
[3]	Containment	0 1 2 (3)	1	3	3	3.3
[4]	Waste Characterisitics					
	Toxicity/Persistence	0 3 9 12 15 (18)	1	18	18	
	Hazardous Waste	0 1 2 3 4 5 6 7 (8)	1	8	8	
	Total Waste Characteristic Score			26	26	
[5]	Targets					3.4
	Ground Water Use	0 1 2 (3)	3	9	9	
	Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 (35) 40	1	35	40	
	Total Targets Score			44	49	
[6]	If line [1] is 45, multiply [1] x [4] x [5] If line [1] is 0, multiply [2] x [3] x [4] x [5]			17160	57,330	

[7] Divide line [6] by 57,330 and multiply by 100 S_{gw} = 29.93

FIGURE 2
GROUND WATER ROUTE WORK SHEET

Surface Water Route Sheet

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. Section
[1] Observed Release	0 **(45)**	1	45	45	4.1
If observed release is given a score of 45, proceed to line [4]. If observed release is given a score of 0, proceed to line [2].					
[2] Route Characterisitics					4.2
Facility Slope and Intervening Terrain	0 1 2 3	1		3	
1-yr. 24-hr, Rainfall	0 1 2 3	1		3	
Distance to Nearest Surface Water	0 1 2 3	2		6	
Physical State	0 1 2 3	1		3	
Total Route Characteristics Score				15	
[3] Containment	0 1 2 3	1		3	4.3
[4] Waste Characterisitics					4.4
Toxicity/Persistence	0 3 6 9 12 15 **(18)**	1	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 **(8)**	1	8	8	
Total Waste Characteristic Score			26	26	
[5] Targets					4.5
Surface Water Use	0 **(1)** 2 3	3	3	9	
Distance to a Sensitive Environment	**(0)** 1 2 3	2	0	6	
Population Served/ Distance to Water Intake Downstream	**(0)** 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	
Total Targets Score			3	55	
[6] If line [1] is 45, multiply [1] x [4] x [5] If line [1] is 0, multiply [2] x [3] x [4] x [5]			3510	64,350	
[7] Divide line [6] by 64,350 and multiply by 100			S_{SW} = 5.45		

FIGURE 7
SURFACE WATER ROUTE WORK SHEET

Air Route Work Sheet

Rating Factor		Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. Section
[1]	Observed Release	(0) 45	1	0	45	5.1
	Date and Location:					
	Sampling Protocol:					
	If line [1] is 0, the S_a = 0, Enter on line [5]. If line [1] is 45, then proceed to line [2].					
[2]	Waste Characteristics					5.2
	Reactivity and Incompatibility	0 1 2 3	1		3	
	Toxicity	0 1 2 3	3		9	
	Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
	Total Route Characteristics Score				20	
[3]	Targets					5.3
	Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30	1		30	
	Distance to Sensitive Environment	0 1 2 3	2		6	
	Land Use	0 1 2 3	1		3	
	Total Targets Score				39	
[4]	Multiply [1] x [2] x [3]				35,100	

[5] Divide line [4] by 35,100 and multiply by 100 S_a = 0

FIGURE 9
AIR ROUTE WORK SHEET

	S	S^2
GROUNDWATER ROUTE SCORE (S_{gw})	29.93	895.80
SURFACE WATER ROUTE SCORE (S_{sw})	5.45	29.70
AIR ROUTE SCORE (S_a)	0.0	0.0
$S_{gw}^2 + S_{sw}^2 + S_a^2$	xxxx	925.50
$(S_{gw}^2 + S_{sw}^2 + S_a^2)^{1/2}$	xxxx	30.42
$(S_{gw}^2 + S_{sw}^2 + S_a^2)^{1/2} / 1.73 = S_M$	xxxx	17.58

FIGURE 10

WORKSHEET FOR COMPUTING S_M

DOCUMENTATION RECORDS

FOR

HAZARD RANKING SYSTEM

INSTRUCTIONS: The purpose of these records is to provide a convenient way to prepare an auditable record of the data and documentation used to apply the Hazard Ranking System to a given facility. As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference that will make the document used for a given data point easier to find. Include the location of the document and consider appending a copy of the relevant page(s) for ease in review.

FACILITY NAME: Goodson & Son Trucking

LOCATION: 17300 Market Street, Channelview, TX 29°47'22"N, 95°05'13"W

GROUND WATER ROUTE

1. OBSERVED RELEASE

Contaminants detected (5 maximum):
An observed release to ground water was not evaluated.

Rationale for attributing the contaminants to the facility:

HRS Score = 0

2. ROUTE CHARACTERISTICS

Depths to Aquifer of Concern

Name/description of aquifer(s) of concern:

The "Aquifer of Concern" is the lower unit of the Chicot aquifer, also known locally as the Alta Loma Sand. The Chicot aquifer is under water table conditions in Harris County. The base of the Alta Loma Sand is approximately 600 feet.
(Refs. 3, p. 10; 14)

Depth(s) from the ground surface to the highest seasonal level of the saturated zone [water table(s)] of the aquifer of concern:

From the ground surface to the highest seasonal level of the saturated zone of the lower unit of the Chicot aquifer is assigned at the depth of the screen at 218 feet. Well LJ-65-16-717 was used to obtain the depth to the saturated zone.
(Ref. 4, p.113)

Depth from the ground surface to the lowest point of waste disposal/storage:

The cement flue dust was deposited on the ground surface. Therefore, the depth from the ground surface to the lowest point of waste disposal is zero feet.

218 - 0 = 218 feet

(Ref. 5, p. 6, Sec.VIII.L)
HRS Value = 0

Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):

The normal annual total precipitation for the general location around the site is approximately 48 inches.
(Ref. 1, p. 14)

Mean annual lake or seasonal evaporation (list months for seasonal):

The mean annual lake evaporation for the site is 53 inches.
(Ref. 1, p. 13)

Net precipitation (subtract the above figures):
The net precipitation for the site is -5 inches.

48 - 53 = -5 inches
HRS Value = 1

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

The fill material was deposited on soil from the Kenny and Aldine complexes. The soil is dark grayish brown, fine sandy loam of medium acidity. Layers of clay and sand were found to a depth of 230 feet in the well log of well LJ-65-16-717.
(Refs. 6, pp. 9, 18, and Sheet 98, 15, p. 250)

Permeability associated with soil type:

The permeability of the Aldine soil is 1.41×10^{-3} cm /sec and the permeability of the Kenny soil is 1.41×10^{-2} cm/sec. The Aldine soil permeability was used for the HRS Score.

2.0 in/hr X 2.54 cm/in = 5.08 cm/hr X 1 hr/3600 sec = 1.41×10^{-3} cm/sec

(Ref. 6, pp.117 and 119)
HRS Value = 2

Physical State

Physical state of substances at time of disposal (or at present time for generated gases):

The cement flue dust was a fine powder at the time of disposal. Over time the dust has hardened and only the top two or so inches remains powder.
(Ref. 5, p. 4, Sec.VII.D.1)
HRS Value = 2

3. CONTAINMENT

Containment

Method(s) of waste or leachate containments evaluated:
There is no containment method in place at the site. The cement flue dust placed at the site has no cover and the drainage ditches to the north and south empty into the Old River.
(Ref. 5, Sec.VIII.Q)

Method with highest score:

C. Piles: Piles uncovered, waste unstabilized, and no liner.
(Ref. 1, p. 17)
HRS Value = 3

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

The following elements and compounds were detected in the fill material: calcium, potassium, sodium, bis(2-ethylhexyl)phthalate and 4,4'-DDT.
(Ref. 7, pp. 2 and 3)

Compound with highest score:

The following have a matrix score of 18 on the toxicity and persistence matrix: sodium and 4,4'-DDT.
(Attachment 1)
HRS Value = 18

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (give a reasonable estimate even if quantity is above maximum):

Approximately 74,074 cubic yards of cement flue dust was deposited at the site.
(Ref. 5, p. 4, Sec. VII.C.2)
HRS Value = 8

Basis of estimating and/or computing waste quantity:
The FIT calculated the waste quantity from the estimated site dimensions.

$$\frac{200 \text{ ft. wide} \times 1000 \text{ ft. long} \times 10 \text{ ft. deep}}{\frac{27 \text{ cubic ft.}}{1 \text{ cubic yard}}} = 74{,}074 \text{ cubic yards}$$

(Ref. 5, Attachment A)

5. TARGETS

Ground Water Use

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

Domestic, industrial and public supply are the uses of the wells drawing from the lower unit of the Chicot aquifer within a 3-mile radius of the site.
(Ref. 4, pp. 111-116, 146 and 162)
HRS Value = 3

Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply.

The Texaco service station north of Highway I-10 and west of the site has the nearest well, LJ-65-16-717, drawing from the "Aquifer of Concern".
(Ref. 4, pp. 113 and 116)

Distance to above well or building:

The well is approximately 4400 feet west of the site.
(Ref. 4, pp. 113 and 116)
HRS Score = 3

Population Served by Ground Water Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

There are six domestic wells within a 3-mile radius of the site. Assuming that 3.8 people utilize each of the six wells, 23 people would be using the area domestic wells. There are also eight public water supply wells within the specified area, not including wells designated for roadside parks. Five of the eight wells serve approximately 12500 people.
(Refs. 4, pp. 111-116; 9 and 10)

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

There are no irrigation wells within a 3-mile radius of the site. The population affected by irrigation is zero.
(Ref. 4, pp. 111-116)

Total population served by ground water within a 3-mile radius:

The total population served by groundwater within a 3-mile radius of the site is greater than 12,500.

12,500 + 0 = 12,500

(Refs. 4, pp. 111-116; 9 and 10)
HRS Score = 5

HRS Matrix Score = 35

SURFACE WATER ROUTE

1. **OBSERVED RELEASE**

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

Calcium, potassium and sodium were detected in the south ditch adjacent to the site in concentrations greater than five times the background. (Ref. 7)

Rationale for attributing the contaminants to the facility:

The contaminants were found in high concentrations in the fill material and in the drainage path immediately south of the site. (Ref. 7)

HRS Score = 45

2. **ROUTE CHARACTERISTICS**

<u>Facility Slope and Intervening Terrain</u>

Average slope of facility in percent:

Name/description of nearest downslope surface water:

Average slope of terrain between facility and above-cited surface water body in percent:

Is the facility located either totally or partially in surface water?

Is the facility completely surrounded by areas of higher elevation?

1-Year 24-Hour Rainfall in Inches

Distance to Nearest Downslope Surface Water

Physical State of Waste

3. CONTAINMENT

Containment

Methods of waste or leachate containment evaluated:

Method with highest score:

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

The following elements and compounds were detected in the fill material: calcium, potassium, sodium, bis(2-ethylhexyl)phthalate and 4,4'-DDT.
(Ref. 7, pp. 2 and 3)

Compound with highest score:

The following have a matrix score of 18 on the toxicity versus persistence matrix: sodium and 4,4'-DDT.
(Attachment 1)
HRS Score = 18

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (give a reasonable estimate even if quantity is above maximum):

Approximately 74,074 cubic yards of cement precipitator dust was placed at the site.
(Ref. 5, p. 4, Sec.VII.C.2)

Basis of estimating and/or computing waste quantity:

The FIT calculated the waste quantity from the estimated site dimensions.

$$\frac{200 \text{ ft. wide} \times 1000 \text{ ft. long} \times 10 \text{ ft. deep}}{\frac{27 \text{ cubic ft.}}{1 \text{ cubic yard}}} = 74{,}074 \text{ cubic yards}$$

(Ref. 5, Attachment A)
HRS Value = 8

5. TARGETS

Surface Water Use

Use(s) of surface water within 3 miles downstream of the hazardous substance:

The surface water within 3 miles downstream of the site is used for shipping, non-contact recreation, high aquatic life and no domestic water supply.
(Ref. 12)
HRS Value = 1

Is there tidal influence?

There is tidal influence in the river near the site. The San Jacinto River north of the site is named "San Jacinto River Tidal" according to the Texas Water Commission.
(Refs. 12 and 16)

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

There is no coastal wetland within a 2 mile radius of the site.
(Ref. 2)
HRS Score = 0

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

There is no fresh-water wetland within a 1 mile radius of the site.
(Ref. 2)
HRS Score = 0

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

There is not a critical habitat or national wildlife refuge within a 1 mile radius of the site.
(Refs. 2 and 13)
HRS Score = 0

Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

There are no water supply intakes within 3 miles downstream of the site.
(Ref. 12)

Computation of land area irrigated by above-cited intake(s) and conversion to population (1.5 people per acre):

There are no water supply intakes downstream of the site.
(Ref. 12)

Total population served:

The total population served by surface water is zero.
(Ref. 12)
HRS Score = 0

Name/description of nearest of above water bodies:

NA.

Distance to above-cited intakes, measured in stream miles.

NA.

AIR ROUTE

1. OBSERVED RELEASE

Contaminants detected:
An observed release to the air was not evaluated.

Date and location of detection of contaminants:

Methods used to detect the contaminants:

Rationale for attributing the contaminants to the site:

2. WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

Most incompatible pair of compounds:

Toxicity

Most toxic compound:

Hazardous Waste Quantity

Total quantity of hazardous waste:

Basis of estimating and/or computing waste quantity:

3. TARGETS

Population Within 4-Mile Radius

Circle radius used, give population, and indicate how determined:

0 to 4 mi 0 to 1 mi 0 to ½ mi 0 to ¼ mi

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

Distance to critical habitat of an endangered species, if 1 mile or less:

Land Use

Distance to commercial/industrial area, if 1 mile or less:

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

Distance to residential area, if 2 miles or less:

Distance to agricultural land in production within past 5 years, if 1 mile or less:

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

Is a historic landmark site (National Register or Historic Places and National Natural Landmarks) within the view of the site?

ATTACHMENT 1

TOXICITY AND PERSISTENCE

Elements & Compounds	Toxicity (Ref 8)	Persistence (Ref 1, p. 18)
Calcium	Unknown (p. 616)	3
Potassium	Unknown (p. 2267)	3
Sodium	3 (p. 790)	3
Bis(2-ethylhexyl) phthalate	3 (p. 481)	3
4,4'-DDT	3 (p. 854)	3

HRS DOCUMENTATION LOG SHEET	SITE NAME: Goodson & Son Trucking CITY: Channelview STATE: Texas IDENTIFICATION NUMBER: TXD981052475

Reference Number	Description of the Reference
1.	Uncontrolled Hazardous Waste Site Ranking System: A Users Manual, 47 FR 31219-31243, 16 July 1982. (Appendix A: CERCLA).
2.	USGS 7.5 minute series topographic maps, Highlands, TX; 1982. Jacinto City, TX; 1982. La Porte, TX; 1982.
3.	Digital Models for Simulation of Ground-Water Hydrology of the Chicot and Evangeline Aquifers along the Gulf Coast of Texas. Report 289. May 1985. Texas Department of Water Resources.
4.	Ground-Water Data for Harris County, Texas. Volume II Records of Wells, 1892-1972. Report 178. January 1974. Texas Water Development Board.
5.	Pierce, Terry D., FIT Chemist. Potential Hazardous Waste Site, Site Inspection Report, Goodson & Son Trucking, Channelview, TX. TXD981052475. November 10, 1987.
6.	Soil Survey of Harris County, Texas. August 1976. United States Department of Agriculture, Soil Conservation Survey.
7.	Cason, Victor, FIT Chemist. Sampling Inspection Report, Goodson & Son Trucking, Channelview, TX. TXD981052475. February 28, 1989.
8.	Sax, Irving. Dangerous Properties of Industrial Materials, Sixth edition, 1984. Van Nostrand Reinhold Co.
9.	ROC. TO: Rickey Hennigan, Operator, Harris County Water Control and Improvement District #21, Channelview, TX. FROM: Victor Cason, FIT Chemist. EPA Region VI. Re: Location and population served by the wells in district #21. March 6, 1989.
10.	ROC. TO: Steve Early, operator, Harris County Water District #6, Channelview, TX. FROM: Victor Cason, FIT Chemist. EPA Region VI. Re: Location and population served by the wells in district #6. March 6, 1989.

HRS DOCUMENTATION LOG SHEET	SITE NAME: Goodson & Son Trucking CITY: Channelview STATE: Texas IDENTIFICATION NUMBER: TXD981052475

Reference Number	Description of the Reference
11.	Rainfall Frequency Atlas of the United States, Technical Paper No. 40. U.S. Department of Commerce.
12.	ROC. TO: Jim Rice, Field Inspector, Texas Water Commission, Deer Park, TX. FROM: Victor Cason, FIT Chemist. EPA Region VI. Re: Uses of the San Jacinto River upstream and downstream of the site.
13.	LETTER. TO: Victor Cason, FIT Chemist. EPA Region VI. FROM: Dorinda Sullivan, Data Manager, Texas Natural Heritage Program. November 10, 1988. Re: Sensitive habitats within a 3-mile radius of the site.
14.	ROC. TO: Ernest Baker, Hydrologist, USGS Austin, TX. FROM: Victor Cason, FIT Chemist. EPA Region VI. Re: The Extent of the Alta Loma Sand near the site.
15.	Ground-Water Data for Harris County, Texas. Volume I Drillers' Logs of Wells, 1905-71. Report 178. November 1973. Texas Water Development Board.
16.	ROC. TO: Jim Rice, Field Inspector, Texas Water Commission, Deer Park, TX. FROM: Victor Cason, FIT Chemist. EPA Region VI. Re: Tidal influence of the San Jacinto River near the site.

REFERENCES

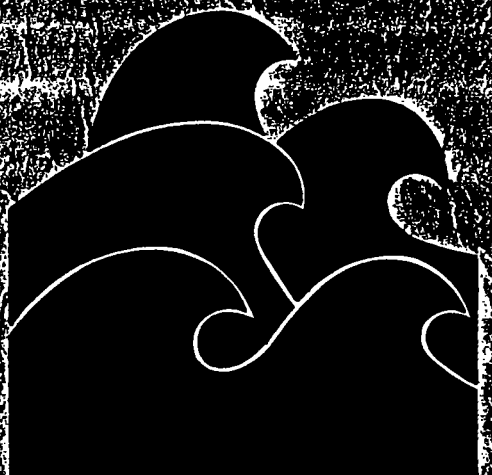
If the entire reference is not available for public review in the EPA regional files on this site, indicate where the reference may be found:

Reference Number	Description of the Reference
1	Uncontrolled Hazardous Waste Site Ranking System: A Users Manual. 47 FR 31219-31243, 16 July 1982 (Appendix A, CERCLA).

Ref 3

Report 289

DIGITAL MODELS FOR SIMULATION OF GROUND-WATER HYDROLOGY OF THE CHICOT AND EVANGELINE AQUIFERS ALONG THE GULF COAST OF TEXAS



TEXAS DEPARTMENT OF WATER RESOURCES

Chicot Aquifer

The Chicot aquifer is composed of the Willis Sand, Bentley Formation, Montgomery Formation, Beaumont Clay, and Quaternary alluvium. The Chicot includes all deposits from the land surface to the top of the Evangeline aquifer. The altitude of the base of the Chicot aquifer is shown in Figures 4 and 5.

In much of the coastal area, the Chicot aquifer consists of discontinuous layers of sand and clay of about equal total thickness. However, in some parts of the coastal area (mainly within the Houston area), the aquifer can be separated into an upper and lower unit (Jorgensen, 1975). The upper unit can be defined where the altitude of its potentiometric surface differs from the altitude of the potentiometric surface in the lower unit. If the upper unit of the Chicot aquifer cannot be defined, the aquifer is said to be undifferentiated. The aquifer is under water-table conditions in its updip part, becoming confined in the downdip direction. Throughout most of Galveston County and southeast Harris County, the basal part of the Chicot aquifer is formed by a massive sand section that has a relatively high hydraulic conductivity. This sand unit, which is heavily pumped in some places, is known locally as the Alta Loma Sand (Alta Loma Sand of Rose, 1943).

Evangeline Aquifer

The Evangeline aquifer, which consists mostly of discontinuous layers of sand and clay of about equal total thickness, is composed of the Goliad Sand and the uppermost part of the Fleming Formation. The altitude of the base of the Evangeline aquifer is shown in Figures 6 and 7. Because the Chicot and Evangeline aquifers are geologically similar, the basis for separating them is primarily a difference in hydraulic conductivity, which in part causes the difference in the altitudes of the potentiometric surfaces in the two aquifers. The aquifer is under water-table conditions in its updip part, becoming confined in the downdip direction.

Burkeville Confining Layer

The Burkeville confining layer, which is composed of the upper part of the Fleming Formation, consists mainly of clay but contains some layers of sand. The Burkeville, which underlies the Evangeline aquifer, restricts the flow of water except in areas where it is pierced by salt domes and in areas where it contains a high percentage of sand.

DESCRIPTION OF THE DIGITAL MODELS

The conceptual model (Figure 8) for the four modeled subregions (Figure 9) consists of five layers. In ascending order, layer 1 is equivalent to the total thickness of the sand beds in the Evangeline aquifer; layer 2 is equivalent to the clay thickness between the centerline of the Chicot aquifer and the centerline of the Evangeline aquifer; layer 3 is equivalent to the Alta Loma Sand of Rose (1943) where present, otherwise it is equivalent to the total thickness of the sand beds in the Chicot aquifer; layer 4 is equivalent to the clay thickness between the land surface and the centerline of the Chicot aquifer; and layer 5 is used as an upper boundary to simulate recharge to

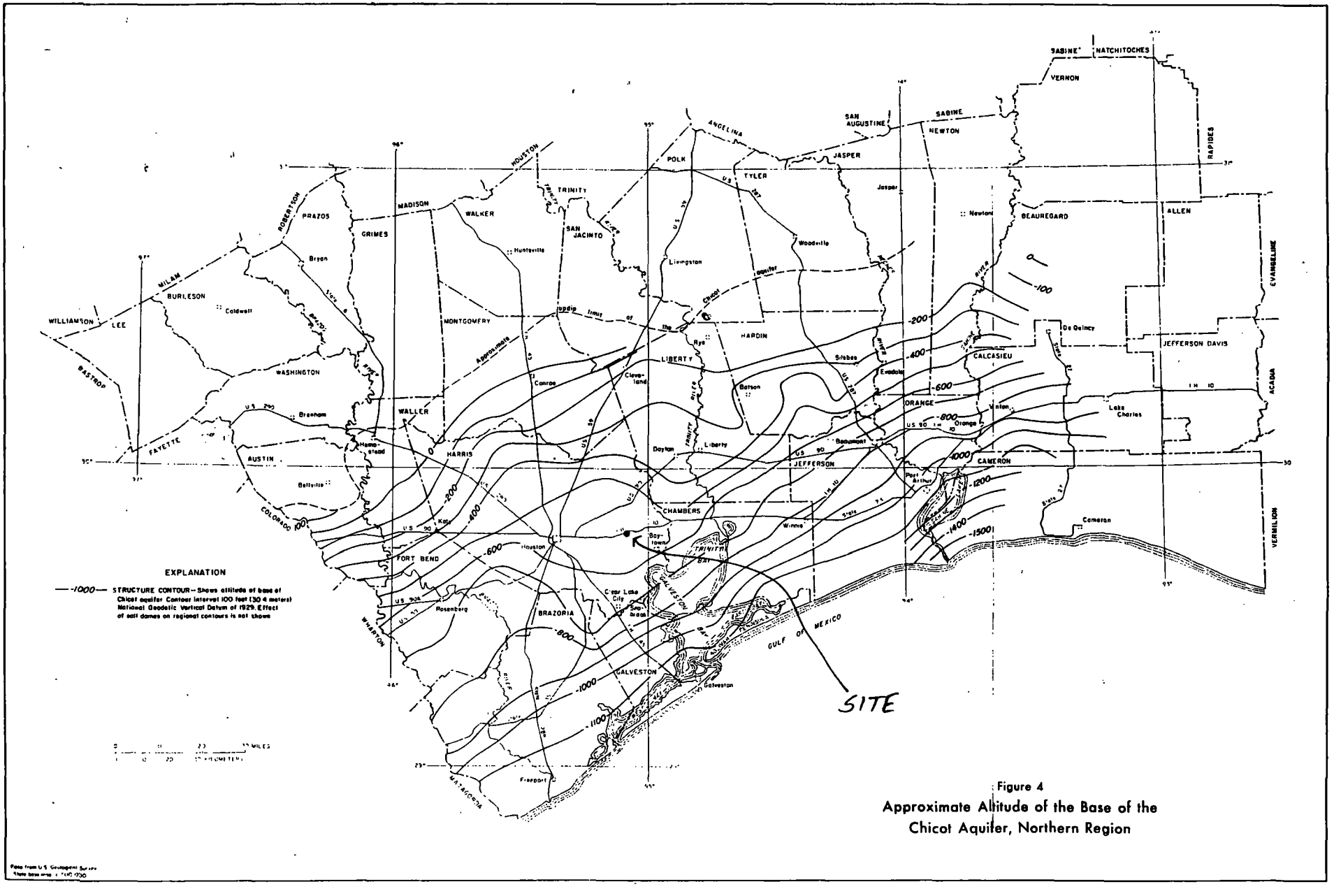
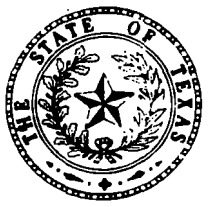


Figure 4
Approximate Altitude of the Base of the Chicot Aquifer, Northern Region

TEXAS
WATER
DEVELOPMENT
BOARD



Report 178

GROUND-WATER DATA FOR HARRIS COUNTY, TEXAS VOLUME II RECORDS OF WELLS, 1892-1972

January 1974

Records of wells in Harris County

All wells are drilled unless otherwise noted in remarks column.

Water level : Reported water levels given in feet; measured water levels given in feet and tenths.

Method of lift and type of power: A, airlift; B, bucket; C, cylinder; CF, centrifugal; E, electric; G, gasoline, oil, butane, or diesel engine; Ng, natural gas; H, hand; J, jet; N, none; Sub, submersible; T, turbine; W, windmill. Number indicates horsepower.

Use of water : D, domestic; Ind, industrial; Irr, irrigation; N, none; P, public supply, S, livestock.

Water bearing unit : C, Chicot aquifer; CU, Upper unit of Chicot aquifer; CL, Lower unit of Chicot aquifer; E, Evangeline aquifer; J, Jasper aquifer.

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing		Water Bearing unit	Altitude of land surface (ft.)	Water Level		Method of lift	Use of Water	Remarks
					Diameter (in.)	Depth (ft.)			Above (+) below land surface datum (ft.)	Date of Measurement			
60-57-202	Mrs. A. F. Knebel	Unknown	1908	52	20	52	C	281	30.8	Oct. 22, 1963	J,E	D,S	Dug and bored to 52 ft. 20 inch tile casing with open end.
301	Ada Oil Co.	Katy Drilling Co.	1959	778	16 12	301 778	E	287	135.3	Oct. 1963	T,E 100	Irr,S	Screen from 588 to 778 ft. Supplies lake. 2/
302	B. H. Mehrkam	B. E. Petry	1963	120	4	120	C	260	41.8	Oct. 22, 1963	C,W	S	Screen from 114 to 120 ft.
303	Stokes	Unknown	--	60	4	60	C	266	18.1	Nov. 5, 1931	N	N	Well destroyed.
501	B. F. Quinn	Unknown	--	20	3	20	C	255	3.5	May 13, 1931	N	N	Test well. Well destroyed.
502	Dr. Berry	Unknown	--	42	24	42	C	264	34.0	Apr. 13, 1931	B,H	D	Dug well. Reported dug to 80 ft. Measured 42 ft. in 1931.
503	H. H. Strickland	H. H. Stickland	1918	30	10	30	C	245	7.0 13.4	Apr. 13, 1931 Aug. 2, 1933	N	N	Bored well. Wood casing. Well destroyed.
504	C. H. Burton	Unknown	1931	22	10	22	C	245	7.0 6.9	Apr. 13, 1931 Feb. 12, 1962	N	N	Dug well. Well destroyed. 3/
601	Warren Vincent	Roy Turner	1947	734	18 14 12	218 452 734	E,C	277	--	--	T,Ng	Irr	Casing slotted from 100 to 734 ft.
602	Hurricane Fence Co.	Layne Texas Co.	1948	800	20 12 8	250 614 800	E	271	94	Mar. 1948	T,Ng	Irr	315 ft. of slotted casing between 250 and 775 ft. Reported yield 1,525 gpm with 45 ft. drawdown when drilled. 2/
603	Schindler Farms	Katy Drilling Co.	1951	825	24 16 10	300 510 825	E,C	264	--	--	T,E 200	Irr	Casing slotted from 104 to 825 ft. 2/
604	B. L. Snowden	B. E. Petry	1938	211	4	211	E	260	37	1938	C,E 1	D,S	Screen from 201 to 211 ft.
605	T. W. Ray	Unknown	1870	71	24 8	40 71	C	276	48.6	Nov. 6, 1931	N	N	Bored well; tile casing; open end. Well destroyed.
606	Elmer Bennett	Unknown	--	100	4	100	C	261	42.1	Nov. 5, 1931	N	N	Bored well. Well destroyed.
607	Schindler Farms	H. H. Strickland	1926	122	4	122	C	256	48.3 78.8	Apr. 13, 1931 Feb. 12, 1971	N	N	1/
608	Schindler Farms Well 2	Layne Texas Co.	1968	857	20 12	369 857	E	264	131	Apr. 8, 1968	T,Ng	Irr	378 ft. of slotted casing between 250 and 843 ft. Reported yield 3,024 gpm with 136 ft. drawdown when drilled. 2/
609	Charlie Kmiec	Schoppa Water Well Service	1969	265	4 2½	-- 265	E	275	115	Apr. 29, 1969	Sub,E 1	D	Screen from 255 to 265 ft. 2/
610	Owen Glover, Jr.	do	1969	254	4	254	E	274	115	Apr. 20, 1969	Sub,E 1	D	Screen from 244 to 254 ft. 2/
901	W. O. Dennison and Sons	Katy Drilling Co.	1954	1,453	20 12	359 1,453	E	229	--	--	T	Irr	Casing slotted from 253 to 1,453 ft. 2/
902	J. C. Jenkins	A. H. Justman	1951	622	20 12	200 622	E	237	--	--	T,E	Irr	Casing slotted from 272 to 622 ft.
904	J. A. Hafner	Unknown	1931	21	3	21	C	246	4.0 7.3	May 1, 1931 Mar. 13, 1936	N	N	Well destroyed. 3/
905	C. I. Garrett	Hiram Bennett	1905	70	6	70	C	245	44.6 47.8	Apr. 25, 1931 Mar. 4, 1960	N	N	Well destroyed. 3/
906	do	H. H. Strickland	1900	61	6	61	C	246	45.2 50.4	Apr. 13, 1931 Jun. 14, 1956	J,E	D	3/

See footnotes at end of table.

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water bearing unit	Altitude of land surface (ft.)	Water Level: Above (+) below land surface datum (ft.)	Water Level: Date of Measurement	Method of lift	Use of Water	Remarks
65-16-106	Arco Chemical Co.	Layne Texas Co.	1940	312	12 7	194 312	CL	40	65 151.7	Feb. 9, 1940 Feb. 6, 1968	T,E	N	74 ft. of screen between 201 and 291 ft. Reported yield 600 gpm with 88 ft. drawdown when drilled. Supplies swimming pool. 2/ 3/
107	Banana Bend Estate Well 2	T. C. Bussell and Son	1963	395	4	395	CL	10	--	--	Sub,E 5	P	Screen from 375 to 395 ft.
• 109	Southland Paper Mill Well 1	Texas Water Wells, Inc.	1966	1,625	24 14	840 1,625	E	49	191 267	Sept. 11, 1966 Apr. 8, 1970	T,E 500	Ind	342 ft. of screen between 842 and 1,614 ft. Reported yield 2,100 gpm with 48 ft. drawdown Sept. 11, 1966. Test hole drilled to 1,672 ft. 1/ 2/
• 110	Southland Paper Mill Well 2	do	1966	1,625	24 14	796 1,625	E	48	260 263	Feb. 7, 1969 Apr. 8, 1970	T,E 500	Ind	373 ft. of screen between 806 and 1,610 ft. Test hole drilled to 1,627 ft. 1/ 2/
• 111	Southland Paper Mill Well 4	do	1966	1,568	24 14	918 1,568	E	46	192 263	Feb. 7, 1967 Apr. 8, 1970	T,E 500	Ind	346 ft. of screen between 923 and 1,551 ft. Reported yield 2,100 gpm with 40 ft. drawdown Feb. 7, 1967. Test hole drilled to 1,595 ft. 1/ 2/
• 112	Southland Paper Mill Well 5	do	1966	1,593	24 14	845 1,593	E	46	185 259	Dec. 8, 1967 Apr. 8, 1970	T,E 500	Ind	321 ft. of screen between 853 and 1,577 ft. Reported yield 2,100 gpm with 19 ft. drawdown Dec. 8, 1967. Test hole drilled to 1,710 ft. 1/ 2/
• 113	Southland Paper Mill Well 6	do	1966	1,712	24 14	876 1,712	E	11	102 236	Jan. 1, 1967 Apr. 8, 1970	T,E 500	Ind	378 ft. of screen between 880 and 1,697 ft. Reported yield 2,100 gpm with 39 ft. drawdown Jan. 14, 1967. Test hole drilled to 1,720 ft. 1/ 2/
201	Mills Water Supply	Heffinger	1957	272	6 4	240 272	CL	17	121	1961	T,E 10	P	Supplies Barrett Station.
202	McDermott and Barnhart Ranch	Layne Texas Co.	1949	926	24 14	319 926	CL,E	50	95	Mar. 7, 1949	T,E	Irr	329 ft. of screen between 331 and 914 ft. Reported yield 2,919 gpm with 40 ft. drawdown when drilled.
• 205	Arcadian Gardens Corp.	do	1956	315	8 6	215 315	CL	45	107	Mar. 20, 1956	T,E 25	P	60 ft. of screen between 225 and 297 ft. Reported yield 359 gpm with 14 ft. drawdown when drilled.
206	Lester Schuler	A and L Pump and Well Service	1963	260	4	260	CL	51	130	Jan. 1963	Sub,E 1½	D	Screen from 245 to 260 ft. 2/
301	D. R. Lang	Unknown	--	90	3	90	CU	47	5.2	June 27, 1939	N	N	Well destroyed.
• 302	R. Sralla	T. E. Reidland	1933	98	3 1½	24 98	CU	44	20	1933	N	N	Screen from 91 to 98 ft. Well destroyed.
• 303	do	do	--	298±	3	--	C	49	--	--	N	N	
401	Arco Chemical Co.	Texas Water Wells, Inc.	1956	1,575	20 12	725 1,575	E	45	165	Mar. 27, 1956	T,E 400	Ind	250 ft. of screen between 760 and 1,565 ft. Reported yield 2,316 gpm with 73 ft. drawdown when drilled.
402	J. McDonald	J. W. Evans	1941	228	3 2	222 228	CL	30	76	Sept. 1941	N	N	Screen from 222 to 228 ft. Well destroyed.
403	Harris County WC and ID No. 84	Layne Texas Co.	1964	1,125	16 10	702 1,125	E	40	259	Oct. 29, 1964	T,E 125	P	154 ft. of screen between 710 and 1,115 ft. Reported yield 1,010 gpm with 76 ft. drawdown when drilled.
404	Baroid Co.	do	1965	750	10 6	570 750	CL,E	43	222	Dec. 23, 1965	T,E 60	Ind	90 ft. of screen between 580 and 735 ft. Reported yield 350 gpm with 54 ft. drawdown when drilled. Test hole drilled to 880 ft. 2/

See footnotes at end of table.

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing Diameter (in.)	Casing Depth (ft.)	Water Bearing unit	Altitude of land surface (ft.)	Water Level Above (+) below land surface datum (ft.)	Water Level Date of Measurement	Method of lift	Use of Water	Remarks
65-16-405	W. B. Williams	Lowry Water Wells	1967	421	4 2½	402 421	CL	36	210	Aug. 28, 1967	Sub,E 1½	D	Screen from 405 to 420 ft. 2/
406	Conrad Ermel	A and L Pump and Well Service	1968	286	4 2½	263 286	CL	36	1HH	Mar. 1968	Sub,E 1	D	Screen from 271 to 286 ft. 2/
407	W. B. Wade	H and H Water Well Drilling	1968	292	4	292	CL	37	182	Mar. 1, 1968	Sub,E 1	D	Screen from 282 to 292 ft. 2/
502	Harris County F.W.D. No. 1 Well 1	Layne Texas Co.	1949	482	16 8	415 482	CL	38	--	--	T,E	P	Screen from 429 to 471 ft. Original depth was 551 ft. Well reworked 1963. Reported yield 328 gpm in 1963.
• 503	Harris County F.W.D. No. 1 Well 2	do	1949	476	12 6	417 476	CL	39	176.7	May 11, 1962	T,E	P	Casing slotted from 421 to 476 ft.
504	Harris County WC and ID No. 1	do	1962	510	16 10 8	380 462 510	CL	41	165.8	Oct. 24, 1962	T,E	P	Screen from 390 to 490 ft. Reported yield 752 gpm with 28 ft. drawdown when drilled. 2/
• 505	do	McMasters and Pomeroy	1940	606	8 7 6	403 -- 606	CL	39	80	Apr. 1940	N	N	98 ft. of screen between 417 and 589 ft. Reported yield 500 gpm with 92 ft. drawdown when drilled. Well destroyed.
506	do	Layne Texas Co.	1931	537	8 6 4	125 -- 537	CL	40	--	--	N	N	Screen from 502 to 537 ft. Reported yield 100 gpm when drilled. Well destroyed.
507	Elmer Moore, Jr.	A and L Pump and Well Service	1962	103	2	103	CU	43	17	Oct. 1962	J,E 1	D	Screen from 97 to 103 ft. 2/
508	Texas Highway Department	Lowry Water Wells	1966	468	6 4	414 468	CL	30	204.4 221.6	Sept. 9, 1966 Feb. 19, 1971	Sub,E	P	Screen from 413 to 453 ft. Supplies roadside park. 1/ 2/
• 509	do	do	1966	464	6 4	412 464	CL	34	203.9 221.0	Sept. 9, 1966 Feb. 19, 1971	Sub,E	P	Screen from 415 to 455 ft. Supplies roadside park. 1/
• 601	Harris County F.W.D. No. 1B	Layne Texas Co.	1949	489	10 6	364 489	CL	39	128	June 1949	T,E 40	P	61 ft. of screen between 375 and 471 ft. Reported yield 318 gpm with 16 ft. drawdown when drilled.
• 602	Harris County F.W.D. No. 1A	do	1953	498	10 5	390 498	CL	36	138	June 1953	T,E 40	P	Screen from 397 to 477 ft. Reported yield 348 gpm with 25 ft. drawdown when drilled.
603	Harris County F.W.S.D. No. 1	J. H. Morton	1935	500	4	500	CL	36	--	--	N	N	Screen from 460 to 500 ft. Well destroyed.
604	do	C. A. Williams	1939	480	6	480	CL	36	--	--	N	N	Screen from 440 to 480 ft. Well destroyed.
605	L. B. Standley	Lowry Water Wells	1965	431	4 2½	338 431	CL	41	148	Mar. 30, 1965	Sub,E 2	P	42 ft. of screen between 338 and 398 ft. 2/
606	Atlantic Richfield Co.	A and L Pump and Well Service	1968	435	4 2½	390 435	CL	36	200	Dec. 26, 1968	Sub,E 2	Ind	Screen from 420 to 435 ft. Supplies service station. 2/
607	Bobby Smith	Sugg and Smith Drilling Co.	1969	322	4 2½	300 322	CL	40	175	Mar. 10, 1969	Sub,E 2	D	Screen from 307 to 322 ft. Reported yield 28 gpm with 24 ft. drawdown when drilled. 2/
701	Harris County WC and ID No. 21	Layne Texas Co.	1951	902	16 8	710 902	E	36	208.5 235.7	July 18, 1951 Feb. 20, 1959	T,E 100	P	102 ft. of screen between 719 and 890 ft. Reported yield 760 gpm with 45 ft. drawdown when drilled. 2/ 3/

See footnotes at end of table.

Records of wells in Harris County--Continued

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water Bearing unit	Altitude of land surface (ft.)	Water Level: Above (+) below land surface datum (ft.)	Water Level: Date of Measurement	Method of lift	Use of Water	Remarks
65-16-702	Harris County WC and ID No. 21	Layne Texas Co.	1949	663	10 6	391 663	CL	33	156	June 30, 1949	T,E	P	93 ft. of screen between 398 and 660 ft. Reported yield 500 gpm with 68 ft. drawdown when drilled.
703	San Jacinto Inn	L. Patterson	1936	650	4	650	E	5	--	--	N	N	Screen from 622 to 644 ft. Well destroyed. 2/
704	Old River Terrace Well 2	A. E. Fawcett, Jr.	1947	276	8	276	C	33	--	--	N	N	Reported 43 ft. of screen. Well destroyed.
705	Old River Terrace Well 3	A. E. Fawcett, Sr.	1943	238	6	238	C	34	--	--	N	N	Reported 25 ft. of screen.
706	Old River Terrace Well 1	do	1947	304	6	304	CL	36	70	Jan. 11, 1949	N	N	Screen from 283 to 304 ft.
• 707	Harris County F.W.S.D. No. 6	McMasters and Pomeroy	1940	640	8 6	600 640	CL	34	--	--	T,E 10	P	Reported 40 ft. of screen.
708	Jacintoport Corp. Well 1	Layne Texas Co.	1941	449	8 6	374 449	CL	30	95 256.3	Aug. 18, 1941 Mar. 8, 1966	N	N	Screen from 399 to 449 ft. Reported yield 210 gpm with 12 ft. drawdown when drilled. Well destroyed. 2/ 3/
• 709	Jacintoport Corp. Well 5	do	1941	447	8 6	372 447	CL	31	95 239.3	Aug. 10, 1941 Feb. 23, 1971	N	N	Screen from 397 to 447 ft. Reported yield 210 gpm with 12 ft. drawdown when drilled. 1/ 2/
• 710	Harris County WC and ID No. 21	Katy Drilling Co.	1966	1,220	16 10	710 1,220	E	33	278.2	Aug. 20, 1966	T,E 150	P	200 ft. of screen between 730 and 1,210 ft. Reported yield 1,000 gpm with 107 ft. drawdown when drilled. Test hole drilled to 1,309 ft. 2/
711	San Jacinto Inn	A. Chrysty Kuhlmann	1962	376	4 2½	-- 376	CL	5	--	--	Sub,E 1	P	Screen from 366 to 376 ft. 2/
712	Humble Oil and Refining Co.	Lowry Water Wells	1963	320	4 2½	304 320	CL	33	200	Mar. 3, 1963	Sub,E 1½	Ind	Screen from 307 to 317 ft. Supplies service station. 2/
714	Harris County F.W.D. No. 6	Layne Texas Co.	1965	645	8 6	560 645	CL	33	154	Aug. 26, 1965	T,E 20	P	58 ft. of screen between 565 and 638 ft. Reported yield 311 gpm with 28 ft. drawdown when drilled. 2/
715	Key Oil Co.	Lowry Water Wells	1968	454	4 2½	-- 454	CL	33	221	May 14, 1968	Sub,E 5	Ind	Screen from 417 to 447 ft. Supplies service station. 2/
716	Production Systems International	B. J. Swinehart Co.	1968	468	4 2	442 468	CL	5	254	Apr. 1968	Sub,E 5	Ind	Screen from 446 to 466 ft. 2/
717	Texaco Inc.	Lowry Water Wells	1964	233	4 2½	214 233	CL	32	176	June 16, 1964	Sub,E 2	Ind	Screen from 218 to 233 ft. Supplies service station. 2/
718	Hutchinson-Hayes International, Inc.	A. Chrysty Kuhlmann	1969	612	6 4	588 612	CL	30	277	June 1969	Sub,E 15	Ind	Screen from 590 to 612 ft. 2/
719	Key Oil Co.	Lowry Water Wells	1968	455	4 2½	423 455	CL	33	221	Nov. 7, 1968	Sub,E 5	Ind	Screen from 425 to 455 ft. Supplies service station. 2/
720	San Jacinto Inn	A. Chrysty Kuhlmann	1970	644	4 2½	617 644	E	5	300	June 1970	Sub,E	P	Screen from 619 to 644 ft. Reported yield 50 gpm with 20 ft. drawdown when drilled. Supplies restaurant. 2/
• 801	Gulf Pipe Line Co.	Layne Texas Co.	1929	434	6	434	CL	5	84.2 223.3	Sept. 23, 1943 Feb. 19, 1971	Sub,E	Ind	Screen from 328 to 415 ft. 1/ 2/
802	Texas Highway Department Lynchburg Ferry	B. J. Swinehart Co.	1964	440	4	440	CL	5	200	June 2, 1964	Sub,E	D	Screen from 419 to 439 ft. 2/

See footnotes at end of table.

WELL USED FOR DEPTH TO WATER

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water bearing unit	Altitude of land surface (ft.)	Water Level: Above (+) below land surface datum (ft.)	Water Level: Date of measurement	Method of lift	Use of water	Remarks
65-16-803	W. A. Hill	Lowry Water Wells	1965	355	4 2½	322 355	CL	32	205	Nov. 12, 1965	Sub,E 2	D	20 ft. of screen between 324 and 355 ft. Test hole drilled to 359 ft. 2/
804	C. S. Todd	A and L Pump and Well Service	1966	360	4 2½	345 360	CL	36	194	Mar. 19, 1966	Sub,E 1½	D	Screen from 345 to 360 ft. 2/
901	Humble Oil and Refining Co.	Layne Texas Co.	1947	471	3	471	CL	29	72.5 137.2	Dec. 1947 June 4, 1964	N	N	Screen from 458 to 471 ft. Drilled to 2,145 ft. Humble test well No 44. Plugged back to 471 ft. Well destroyed. 3/
• 902	City of Baytown Craigmont Well	do	1957	500	14 8	370 500	CL	24	178	June 19, 1957	T,E P	P	Screen from 384 to 490 ft. Reported yield 1,022 gpm with 50 ft. drawdown when drilled.
• 903	Harris County F.W.D. No. 27 Coady	Lowry Water Wells	1954	480	10 5	400 480	CL	30	152	Feb. 1954	T,E 40	P	Screen from 400 to 480 ft.
904	City of Baytown Well 6	Layne Texas Co.	1952	512	12 6	-- 512	CL	24	190 203 223.1	Sept. 10, 1952 Feb. 7, 1956 May 11, 1962	T,E	P	Screen from 418 to 500 ft. Reported yield 524 gpm with 32 ft. drawdown when drilled. 2/
• 905	City of Baytown Well 13	do	1952	500	12 6	-- 500	CL	23	165	July 22, 1952	T,E	P	Screen from 408 to 488 ft. Reported yield 608 gpm with 40 ft. drawdown when drilled.
906	Humble Oil and Refining Co. Well 46	do	1948	1,601	10	--	E	30	--	--	N	N	Drilled to 1,601 ft. Humble test well.
907	Humble Oil and Refining Co. Well 47	do	1949	1,727	24 12 10	770 1,131 1,727	E	27	151 231.4	Oct. 1953 Feb. 28, 1971	N	N	330 ft. of screen between 776 and 1,724 ft. 1/
908	Humble Oil and Refining Co. Well 48	do	1949	1,583	6 4	216 1,583	E	29	195 216.9	Dec. 11, 1950 Oct. 9, 1968	N	N	53 ft. of screen between 803 and 1,550 ft. Drilled to 1,618 ft. Humble test well. Plugged back to 1,583 ft. 2/ 3/
909	Humble Oil and Refining Co. Well 29	Texas Water Wells, Inc.	1941	509	24 12	274 509	CL	30	129	1944	N	N	167 ft. of screen between 270 and 504 ft. Reported yield 2,500 gpm when drilled. Well destroyed.
910	Humble Oil and Refining Co. Well 30	Texas Water Supply Corp.	1941	525	24 12	261 525	CL	31	126 240.8	1944 Sept. 26, 1967	N	N	127 ft. of screen between 379 and 521 ft. Well destroyed. 3/
• 911	City of Baytown Well 14	Katy Drilling Co.	1961	510	20 14	380 510	CL	29	214	July 1, 1961	T,E 150	P	Screen from 401 to 507 ft. Reported yield 1,506 gpm with 39 ft. drawdown when drilled. Test hole drilled to 603 ft. 2/
• 912	City of Baytown Well 11	do	1962	496	20 14	380 496	CL	25	203	June 10, 1962	T,E 200	P	Screen from 386 to 492 ft. Reported yield 1,515 gpm with 42 ft. drawdown when drilled. Test hole drilled to 627 ft. 2/
913	Golden	J. W. Evans	1940	338	3 2	-- 338	CL	31	--	--	N	N	Screen from 328 to 338 ft.
914	Q. G. Barber	Layne Texas Co.	1938	520	8 6	466 520	CL	28	103	Mar. 31, 1938	N	N	Screen from 466 to 516 ft. Reported yield 200 gpm with 9 ft. drawdown when drilled. Well destroyed.

See footnotes at end of table.

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing		Water Bearing unit	Altitude of land surface (ft.)	Water Level		Method of lift	Use of Water	Remarks
					Diameter (in.)	Depth (ft.)			Above (+) below land surface datum (ft.)	Date of Measurement			
65-16-915	Humble Oil and Refining Co. Well 24	Layne Texas Co.	1938	905	6 2½	206 905	E	28	60	July 1938	N	N	Screen from 883 to 905 ft. Test hole drilled to 961 ft. Plugged back to 905 ft. Well destroyed.
916	Humble Oil and Refining Co. Well 50	do	1952	546	20 14	425 546	CL	28	190 243	Aug. 27, 1952 Jan. 13, 1966	T,E	Ind	Reported 100 ft. of screen. Reported yield 2,300 gpm with 70 ft. drawdown when drilled. 2/
917	Humble Oil and Refining Co. Well 29A	do	1961	512	24 16 10	390 -- 512	CL	27	249 247	Sept. 5, 1963 Jan. 14, 1966	T,E	Ind	80 ft. of screen between 400 and 500 ft. Reported yield 1,980 gpm with 51 ft. drawdown Jan. 14, 1966. Test hole drilled to 598 ft. 2/
918	Ashland Chemical Co. Well 2	McMasters and Pomeroy	1958	458	8	458	CL	27	265	Feb. 3, 1971	T,E 40	Ind	80 ft. of screen between 315 and 439 ft.
919	Ashland Chemical Co. Well 3	Layne Texas Co.	1946	517	16 8	-- 517	CL	27	159 259	Oct. 1946 July 1966	T,E 100	Ind	Screen from 401 to 502 ft. Reported yield 1,760 gpm with 36 ft. drawdown when drilled.
920	Ashland Chemical Co. Well 4	do	1956	514	20 12	-- 514	CL	27	209 238	June 11, 1956 May 10, 1963	T,E 125	Ind	Screen from 395 to 500 ft. Reported yield 1,060 gpm with 31 ft. drawdown when drilled. 2/

See footnotes at end of table.

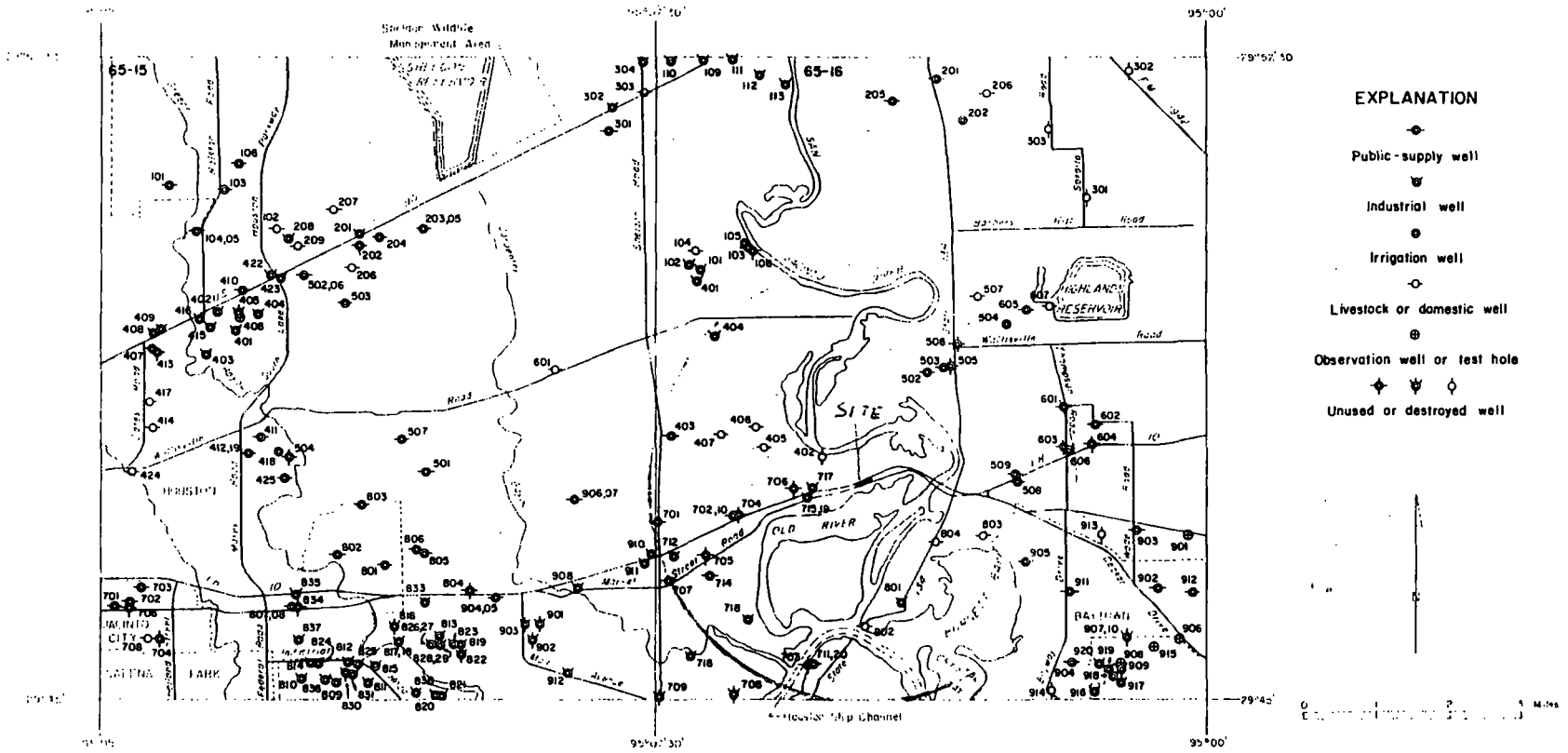


Figure 7
Locations of Wells in Area 6

Base from U.S. Geological Survey
topographic quadrangles

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water Bearing unit	Altitude of land surface (ft.)	Water Level: Above (+) below land surface datum (ft.)	Water Level: Date of Measurement	Method of lift	Use of Water	Remarks
65-23-203	Crown Central Petroleum Co. Well 8	McMasters and Pomeroy	1944	1,262	12 10 8	-- -- 1,262	E	31	272	Sept. 1950	T,E 125	Ind	175 ft. of screen between 680 and 1,256 ft. 2/
204	Crown Central Petroleum Co. Well 9	Layne Texas Co.	1950	1,274	16 8	-- 1,274	E	32	288	July 17, 1950	T,E 125	Ind	197 ft. of screen between 816 and 1,263 ft. Test hole drilled to 1,300 ft. 2/
205	Armco Steel Corp. Well 1	do	1943	1,385	18 10	505 1,385	E	25	260	Jan. 18, 1951	T,E 150	Ind	217 ft. of screen between 950 and 1,350 ft. Reported yield 1,365 gpm with 55 ft. drawdown Jan. 1951.
206	Armco Steel Corp. Well 2	do	1943	1,266	18 10	492 1,266	E	30	254 327	Jan. 4, 1951 Mar. 6, 1962	T,E 150	Ind	161 ft. of screen between 831 and 1,238 ft. Reported yield 1,266 gpm with 61 ft. drawdown Jan. 4, 1951.
207	Armco Steel Corp. Well 3	do	1943	1,255	18 10	381 1,255	E	30	254	Jan. 11, 1951	T,E 150	Ind	190 ft. of screen between 778 and 1,252 ft. Reported yield 1,266 gpm with 64 ft. drawdown Jan. 11, 1951.
208	Olin Corp.	do	1948	412	10 8	190 412	CL	15	160	1958	T,E 40	Ind	111 ft. of screen between 219 and 410 ft. Reported yield 280 gpm with 50 ft. drawdown in 1958.
209	do	do	1948	918	10 8	200 918	E	15	--	--	N	N	111 ft. of screen between 756 and 906 ft.
210	do	McMasters and Pomeroy	1944	673	8 5	320 673	CL	15	--	--	N	N	100 ft. of screen between 342 and 673 ft. Well destroyed. 2/
211	do	do	1944	705	8 5	330 705	E,CL	15	--	--	N	N	100 ft. of screen between 364 and 705 ft. Well destroyed. 2/
• 212	Olin Corp. Well 3	Layne Texas Co.	1951	982	12 8	820 982	E	15	272	June 20, 1951	T,E	Ind	80 ft. of screen between 830 and 970 ft. Reported yield 530 gpm with 38 ft. drawdown when drilled.
213	Phillips Chemical Co. Well 4	do	1951	884	22 10	612 884	E	30	262 310	Sept. 1951 1962	T,E 125	Ind	100 ft. of screen between 697 and 866 ft. Reported yield 767 gpm with 36 ft. drawdown when drilled.
• 214	Phillips Chemical Co. Well 5	do	1952	1,967	20 12	1,220 1,967	E	25	275 353	July 29, 1952 May 1970	T,G	Ind	216 ft. of screen between 1,429 and 1,955 ft. Reported yield 1,705 gpm with 60 ft. drawdown when drilled. 1/
• 215	Phillips Chemical Co. Well 6	do	1952	1,220	20 12	695 1,220	E	25	388	Sept. 15, 1970	T,E	Ind	210 ft. of screen between 730 and 1,200 ft. Reported yield 1,500 gpm with 30 ft. drawdown Sept. 1970.
216	Phillips Chemical Co. Well 3	McMasters and Pomeroy	1943	639	8 5	284 639	CL	10	86	June 9, 1943	N	N	95 ft. of screen between 351 and 639 ft. Reported yield 380 gpm when drilled. 2/
217	Ethyl Corp. Well 1A	Layne Texas Co.	1951	459	8 6	387 459	CL	15	159	June 12, 1951	N	N	Screen from 394 to 450 ft. Construction well for plant. Well destroyed.
218	Ethyl Corp. Well 5A	do	1951	453	14 10	308 453	CL	18	159 267	June 1951 Feb. 23, 1971	T,E	Ind	Screen from 309 to 440 ft. Reported yield 1,543 gpm with 40 ft. drawdown when drilled. 1/
219	Ethyl Corp. Well 4L	do	1951	1,252	20 12 10	692 1,050 1,252	E	21	275 386	Feb. 15, 1955 Feb. 23, 1971	T,E	Ind	290 ft. of screen between 698 and 1,235 ft. Reported yield 1,800 gpm with 54 ft. drawdown Dec. 1954. 1/
220	Ethyl Corp. Well 3A	do	1951	477	14 10	328 477	CL	20	155.2 269	May 10, 1951 Feb. 23, 1971	T,E	Ind	Screen from 329 to 465 ft. Reported yield 1,515 gpm with 60 ft. drawdown when drilled. 1/

See footnotes at end of table.

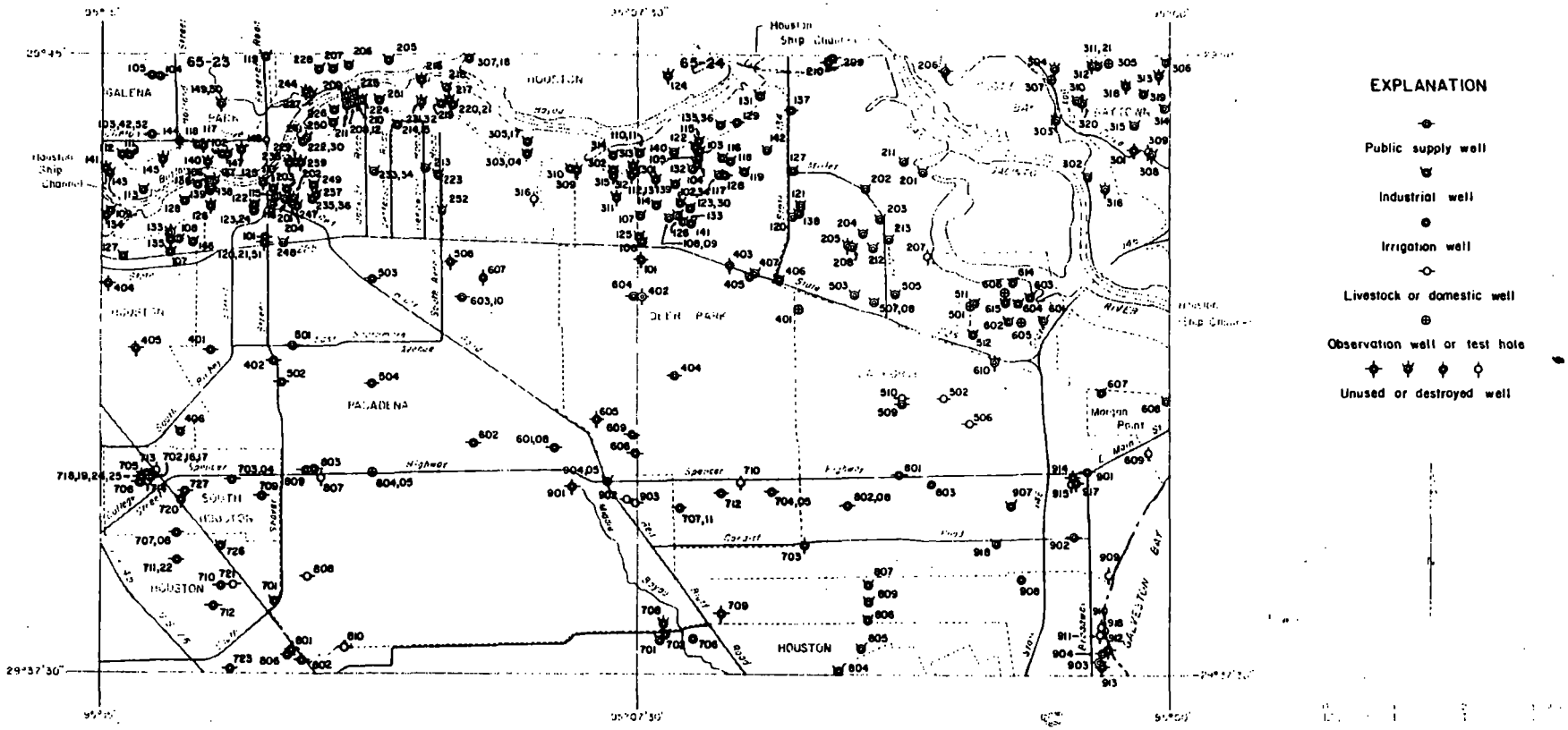


Figure 9
Locations of Wells in Area 8

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water Bearing unit	Altitude of land surface (ft.)	Water Level: Above (+) below land surface datum (ft.)	Water Level: Date of Measurement	Method of lift	Use of Water	Remarks
64-17-111	City of Goose Creek Well 1	Layne Texas Co.	1927	838	10 6	735 838	E	33	--	--	N	N	Screen from 735 to 834 ft. Well destroyed.
• 112	City of Goose Creek Well 2	Humble Oil and Refining Co.	1927	970	8 6	370 970	E	33	--	--	N	N	Well destroyed.
113	Humble Oil and Refining Co.	Pitre Water Wells	1962	105	4	105	CU	33	32	Aug. 1962	J,E 2	Ind	Screen from 73 to 95 ft. 2/
• 201	City of Baytown Well 1-A	Layne Texas Co.	1952	380	14 8 6	284 294 380	CL	22	80 147 162	July 16, 1952 Feb. 16, 1956 May 23, 1962	T,E 75	P	Screen from 300 to 380 ft. Reported yield 554 gpm with 44 ft. drawdown when drilled.
202	City of Baytown Well 1	do	1952	541	--	--	CL	22	--	--	N	N	Screen from 450 to 530 ft. Well never completed. Water too salty.
401	City of Morgan Point	Unknown	1936	450	3	450	CL	32	182.5 254.3	Aug. 2, 1956 Feb. 17, 1971	N	N	Formerly private owner. Taken over by City of Morgan Point and abandoned. 1/
402	do	McMasters and Pomeroy	1952	411	4	411	CL	32	156 253.1	Jan. 1952 Feb. 17, 1971	N	N	Screen from 390 to 411 ft. Formerly private owner. Taken over by City of Morgan Point and abandoned. 1/ 2/
• 403	Captain Crotty	Unknown	1906	450	2 1¼	-- 450	CL	6	63.6 117.3	Jan. 18, 1939 Feb. 16, 1949	N	N	Well destroyed. 3/
404	U.S. Corps of Engineers	Bucholtz	1914	450	4	450	CL	8	61.6 77.7	Jan. 18, 1939 Aug. 23, 1943	N	N	Well destroyed. 3/
405	Mrs. H. S. Mitchell	Layne Bowler Co.	--	1,374	--	--	E	27	--	--	N	N	106 ft. of screen between 915 and 1,294 ft. Well destroyed. 2/
406	A. Vandervoort	Layne Texas Co.	1936	494	4 3 2	-- -- 494	CL	20	64	July 3, 1936	N	N	Screen from 479 to 494 ft. Well destroyed.
407	City of Morgan Point	Pomeroy Drilling Co.	1966	462	12 6	395 462	CL	27	185	Feb. 1966	T,E 40	P	Screen from 352 to 462 ft. Reported yield 400 gpm with 32 ft. drawdown when drilled.
408	Boys Harbor	T. C. Bussell and Son	1968	600	6 4	512 600	CL	21	220	May 15, 1968	Sub,E 20	P	30 ft. of screen between 512 and 557 ft. Supplies boys home. 2/

• Chemical analysis available.
1/ Active water level observation well.
2/ Drillers log available.
3/ Former water level observation well.

F-6-8707-10

EPA — POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

REGION	SITE NUMBER (to be assigned by HQ)
6	TXD981052475

GENERAL INSTRUCTIONS: Complete Sections I and III through XV of this form as completely as possible. Then use the information on this form to develop a Tentative Disposition (Section II). File this form in its entirety in the regional Hazardous Waste Log File. Be sure to include all appropriate Supplemental Reports in the file. Submit a copy of the forms to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force (EN-335); 401 M St., SW; Washington, DC 20460.

I. SITE IDENTIFICATION

A. SITE NAME	B. STREET (or other identifier)		
Goodson & Son Trucking (Landfill)	17300 block of Market Street		
C. CITY	**D. STATE**	**E. ZIP CODE**	**F. COUNTY NAME**
Channelview	TX	77530	Harris

G. SITE OPERATOR INFORMATION

1. NAME		2. TELEPHONE NUMBER	
Goodson & Son Trucking (Kyle Goodson)		(713) 452-9084	
3. STREET	**4. CITY**	**5. STATE**	**6. ZIP CODE**
15937 Ridlon	Channelview	TX	77530

H. REALTY OWNER INFORMATION (if different from operator of site)

1. NAME		2. TELEPHONE NUMBER	
Same as Above			
3. CITY		**4. STATE**	**5. ZIP CODE**

I. SITE DESCRIPTION

Low lying area filled with cement flue dust. High pH water is leaving area.

J. TYPE OF OWNERSHIP

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☒ 5. PRIVATE

II. TENTATIVE DISPOSITION (complete this section last)

A. ESTIMATE DATE OF TENTATIVE DISPOSITION (mo., day, & yr.)	B. APPARENT SERIOUSNESS OF PROBLEM
	☐ 1. HIGH ☒ 2. MEDIUM ☐ 3. LOW ☐ 4. NONE

C. PREPARER INFORMATION

1. NAME	2. TELEPHONE NUMBER	3. DATE (mo., day, & yr.)
Terry D. Pierce, ICF Technology, FIT — Terry D. Pierce FIT	(214) 744-1641	November 10, 1987

III. INSPECTION INFORMATION

A. PRINCIPAL INSPECTOR INFORMATION

1. NAME	2. TITLE	
Mark Hansen	Environmental Engineer	
3. ORGANIZATION		**4. TELEPHONE NO. (area code & no.)**
ICF Technology, 1509 Main Street, Suite 900, Dallas, TX 75201		(214) 744-1641

B. INSPECTION PARTICIPANTS

1. NAME	2. ORGANIZATION	3. TELEPHONE NO.
Terry D. Pierce	ICF Technology; Dallas , Texas	(214) 744-1641

C. SITE REPRESENTATIVES INTERVIEWED (corporate officials, workers, residents)

1. NAME	2. TITLE & TELEPHONE NO.	3. ADDRESS
Kyle Goodson	Owner - (713) 452-9084	15937 Ridlon Channelview, TX 77530
Teo Galvan, Jr.	Engineer - Southwestern Bell Telephone - (713) 600-5050	939 West Greens Road Houston, TX 77067

Continued From Page 2

IV. SAMPLING INFORMATION (continued)

C. PHOTOS

1. TYPE OF PHOTOS: [X] a. GROUND [ ] b. AERIAL

2. PHOTOS IN CUSTODY OF: EPA Region 6 (see attached photos and negatives)

D. SITE MAPPED?

[X] YES. SPECIFY LOCATION OF MAPS: Topo and site sketch attached.

E. COORDINATES

1. LATITUDE (deg.-min.-sec.): 29° 47' 22" N

2. LONGITUDE (deg.-min.-sec.): 95° 05' 13" W

V. SITE INFORMATION

A. SITE STATUS

[ ] 1. ACTIVE (Those industrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if infrequently.)

[X] 2. INACTIVE (Those sites which no longer receive wastes.)

[ ] 3. OTHER (specify): _____ (Those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for waste disposal has occurred.)

B. IS GENERATOR ON SITE?

[XX] 1. NO [ ] 2. YES (specify generator's four-digit SIC Code): _____

C. AREA OF SITE (in acres): 4.5

D. ARE THERE BUILDINGS ON THE SITE?

[X] 1. NO [ ] 2. YES (specify):

VI. CHARACTERIZATION OF SITE ACTIVITY

...ate the major site activity(ies) and details relating to each activity by marking 'X' in the appropriate boxes.

X*	A. TRANSPORTER	X*	B. STORER	X*	C. TREATER	X*	D. DISPOSER
	1. RAIL		1. PILE		1. FILTRATION		1. LANDFILL
	2. SHIP		2. SURFACE IMPOUNDMENT		2. INCINERATION		2. LANDFARM
	3. BARGE		3. DRUMS		3. VOLUME REDUCTION		3. OPEN DUMP
X	4. TRUCK		4. TANK, ABOVE GROUND		4. RECYCLING/RECOVERY		4. SURFACE IMPOUNDMENT
	5. PIPELINE		5. TANK, BELOW GROUND		5. CHEM./PHYS./TREATMENT		5. MIDNIGHT DUMPING
	6. OTHER (specify):		6. OTHER (specify):		6. BIOLOGICAL TREATMENT		6. INCINERATION
					7. WASTE OIL REPROCESSING		7. UNDERGROUND INJECTION
					8. SOLVENT RECOVERY	X	8. OTHER (specify): Backfill of low lying areas.
					9. OTHER (specify):		

E. SUPPLEMENTAL REPORTS: If the site falls within any of the categories listed below, Supplemental Reports must be completed. Indicate which Supplemental Reports you have filled out and attached to this for..

[ ] 1. STORAGE [ ] 2. INCINERATION [ ] 3. LANDFILL [ ] 4. SURFACE IMPOUNDMENT [ ] 5. DEEP WELL

[ ] 6. CHEM/BIO/PHYS TREATMENT [ ] 7. LANDFARM [ ] 8. OPEN DUMP [ ] 9. TRANSPORTER [ ] 10. RECYCLOR/RECLAIMER

VII. WASTE RELATED INFORMATION

A. WASTE TYPE

[ ] 1. LIQUID [X] 2. SOLID [ ] 3. SLUDGE [ ] 4. GAS

B. WASTE CHARACTERISTICS

[X] 1. CORROSIVE [ ] 2. IGNITABLE [ ] 3. RADIOACTIVE [ ] 4. HIGHLY VOLATILE

[X] 5. TOXIC [ ] 6. REACTIVE [ ] 7. INERT [ ] 8. FLAMMABLE

[X] 9. OTHER (specify): High pH

C. WASTE CATEGORIES

1. Are records of wastes available? Specify items such as manifests, inventories, etc. below.

No records exist for this site.

Continued From Page 4

VIII. HAZARD DESCRIPTION (continued)

☐ B. NON-WORKER INJURY/EXPOSURE

☒ C. WORKER INJURY/EXPOSURE

Workers from Southwestern Bell Telephone who worked in a manhole chamber below the site complained of headaches and eye and respiratory irritation. The last occurrence was in February 1985.

☐ D. CONTAMINATION OF WATER SUPPLY

☐ E. CONTAMINATION OF FOOD CHAIN

☐ F. CONTAMINATION OF GROUND WATER

☒ G. CONTAMINATION OF SURFACE WATER

FIT measured the pH of the water in the north drainage ditch approximately 400 feet from the west end of the fill area. The pH was 13.0. This ditch drains into a small cove approximately 200 feet from the fill area.

Continued From Page 6

VIII. HAZARD DESCRIPTION *(continued)*

☐ N. FIRE OR EXPLOSION

☐ O. SPILLS/LEAKING CONTAINERS/RUNOFF/STANDING LIQUID

☐ P. SEWER, STORM DRAIN PROBLEMS

☒ Q. EROSION PROBLEMS

FIT observed evidence of erosion from the site into the north and south drainage ditches. See photo 9.

☒ R. INADEQUATE SECURITY

There are no barriers, man-made or natural, to prevent access to the site.

☐ S. INCOMPATIBLE WASTES

Continued From Page 8

X. WATER AND HYDROLOGICAL DATA (continued)

LIST ALL DRINKING WATER WELLS WITHIN A 1/4 MILE RADIUS OF SITE

1. WELL	2. DEPTH (specify unit)	3. LOCATION (proximity to population/buildings)	4. NON-COMMUNITY (mark 'X')	5. COMMUNITY (mark 'X')
		None - See Attachment A		

RECEIVING WATER

1. NAME: Old River

☐ 2. SEWERS ☒ 3. STREAMS/RIVERS ☐ 4. LAKES/RESERVOIRS ☐ 5. OTHER (specify):

6. SPECIFY USE AND CLASSIFICATION OF RECEIVING WATERS

Navigable waterway, recreation

XI. SOIL AND VEGITATION DATA

LOCATION OF SITE IS IN:

☐ A. KNOWN FAULT ZONE ☐ B. KARST ZONE ☒ C. 100 YEAR FLOOD PLAIN ☐ D. WETLAND

☐ E. A REGULATED FLOODWAY ☐ F. CRITICAL HABITAT ☐ G. RECHARGE ZONE OR SOLE SOURCE AQUIFER

XII. TYPE OF GEOLOGICAL MATERIAL OBSERVED

Mark 'X' to indicate the type(s) of geological material observed and specify where necessary, the component parts.

*X	A. OVERBURDEN	*X	B. BEDROCK (specify below)	X*	C. OTHER (specify below)
	1. SAND		See Attachment A		
	2. CLAY				
	3. GRAVEL				

XIII. SOIL PERMEABILITY

☐ A. UNKNOWN ☐ B. VERY HIGH (100,000 to 1000 cm/sec.) ☐ C. HIGH (1000 to 10 cm/sec.)

☐ D. MODERATE (10 to .1 cm/sec.) ☐ E. LOW (.1 to .001 cm/sec.) ☒ F. VERY LOW (.001 to .00001 cm/sec.)

G. RECHARGE AREA

☐ 1. YES ☒ 2. NO 3. COMMENTS:

H. DISCHARGE AREA

☐ 1. YES ☒ 2. NO 3. COMMENTS:

I. SLOPE

1. ESTIMATE % OF SLOPE	2. SPECIFY DIRECTION OF SLOPE, CONDITION OF SLOPE, ETC.
0-1%	East, silty soil

J. OTHER GEOLOGICAL DATA

The soil type in the area is the Aldine-Urban series. This series consists of deep loamy soils. The soils have a loamy surface with a clayey subsoil. The clay subsoil typically begins at a dept of 20 inches. These soils are poorly drained with slow runoff and low permeability. Permeability is greater than 10^{-7} cm/sec but less than 10^{-5} cm/sec.

ATTACHMENT A

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT SUPPLEMENT SHEET

Instruction - This sheet is provided to give additional information in explanation of a question on the form T2070-3.

Corresponding number on form	Additional Remark and/or Explanation
IV.A.3.G.	ORGANICS Gulf South Research Institute 5010 LeRoy Johnson Road New Orleans, LA 70126 Attention: Darryl Brock (504) 283-4223 INORGANICS Rocky Mountain Analytical Lab 4955 Yarrow Street Arvada, CO 80002 Attention: Tony Maiorana (303) 421-6611
IV.B.1.	Measurement Location No. 1 Type - pH and conductivity measurement. Location - In the north ditch approximately 400 feet from the west end of the fill area in an easterly direction. Measurements were taken 5 inches below the water surface. Results - pH 13.0 conductivity 41,000 umhos Measurement Location No. 2 Type - pH and conductivity measurement. Location - In the north ditch approximately 50 feet east of the fill area. Measurements were taken 3 inches below the water surface. Results - pH 11.1 conductivity 6,200 umhos

ATTACHMENT A

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT SUPPLEMENT SHEET

Instruction - This sheet is provided to give additional information in explanation of a question on the form T2070-3.

Corresponding number on form	Additional Remark and/or Explanation
IV.B.1. (continued)	<u>Measurement Location No. 3</u> Type - pH and conductivity measurement. Location - In the south ditch approximately 50 feet east of the fill area. Measurements were taken 2 inches below the water surface. Results - pH 12.5 conductivity 21,000 umhos <u>Measurement Location No. 4</u> Type - pH and conductivity measurements. Location - In the south ditch approximately 75 feet from the east end of the fill area in a westerly direction. The pool of water was approximately 2 feet in diameter and 2 inches deep. Small tadpoles or minnows were thriving in this pool of water. Results - pH 7.4 conductivity 950 umhos <u>Measurement equipment</u> Portable pH meter with pH probe. Portable conductivity meter with conductivity probe.
VII.C.2.c.3.	Workers for McClelland Engineers, Inc. detected a "diesel" odor from a well which had been drilled near the telephone company manhole. The source of this odor has not been identified.
VII.C.2.e.6.	FIT measured the area of the fill site. The amount was calculated by FIT using the following figures: $\frac{200 \text{ ft. wide} \times 1000 \text{ ft. long} \times 10 \text{ ft. deep}}{\frac{27 \text{ cubic ft.}}{1 \text{ cubic yard}}} = 74{,}074$ cubic yards

ATTACHMENT A

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT SUPPLEMENT SHEET

Instruction - This sheet is provided to give additional information in explanation of a question on the form T2070-3.

Corresponding number on form	Additional Remark and/or Explanation
VIII.U	material was approximately 1 to 3 inches below the water surface. The water had a coffee colored appearance at measurement locations no. 1, no. 2 and no. 3 (See attached site sketch). The high pH water drains into a small cove which is a part of the Old River and San Jacinto River bodies (See attached topo map and site sketch). Although the fill area was well packed, the top 0.5 to 1 inch of the surface consists of very fine and powdery material which is easily kicked up into a dust cloud. There may be a potential for an air release hazard from the fill area. Evidence of erosion was observed from the fill area into both the north and south ditches. Erosion is more severe on the north side of the fill area. There is no evidence of dikes or other engineering controls to prevent or slow the erosion process. Although workers for McClelland Engineers, Inc. noticed a "diesel" odor, FIT did not observe such an odor during this inspection. The piezometer well which was drilled near the telephone company manhole is screened in a very shallow aquifer, which is not used for drinking water purposes. The water in this aquifer is brackish and may be influenced by tidal movements. A soil sample was caught by FIT in the north ditch near the underground storm conduit. The results from the laboratory shows an elevated level of calcium (71,100 mg/kg). Also, several organic compounds were found in the sample, mostly alkanes. FIT believes the elevated level of calcium is causing the high pH of the water in the north and south ditches. Therefore, FIT recommends sampling to determine if the fill area is contributing to the pH of the water. See attachment B for the recommended sampling plan.
X.A.	No water wells were observed within 0.25 miles of the fill area.
XII.A.	The overburden near the site is recent alluvium. This alluvium consists of clay, silt, sand, and gravel. Organic matter is locally abundant. The alluvium is made up of several different kinds of deposits such as; point bar, natural levee, stream channel, back swamp, mud flat, dune and oyster reefs. The overburden is underlain by the Pleistocene Beaumont

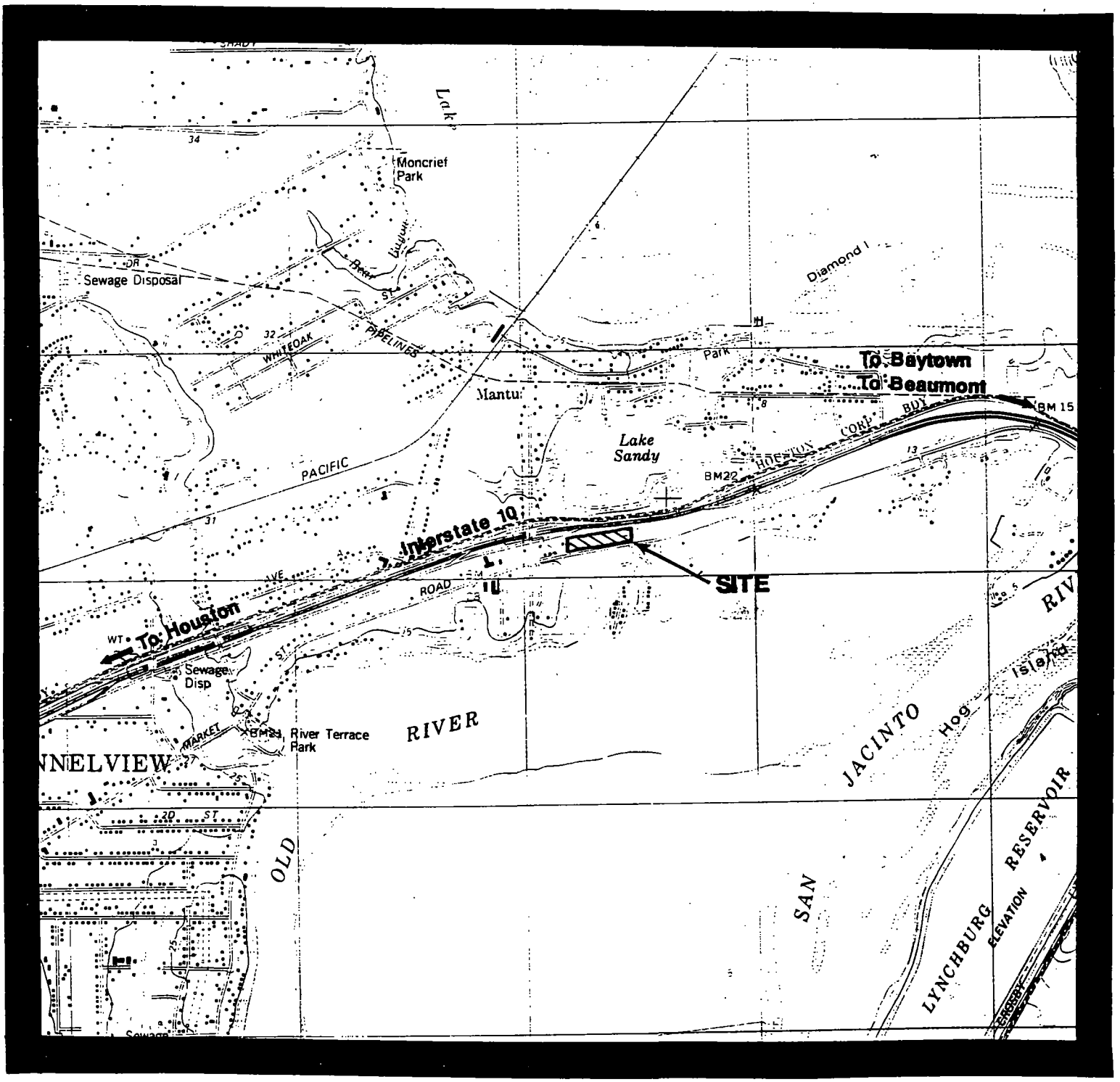
ATTACHMENT A

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT SUPPLEMENT SHEET

Instruction - This sheet is provided to give additional information in explanation of a question on the form T2070-3.

Corresponding number on form	Additional Remark and/or Explanation
XII.A.	formation which consists of barrier islands and beach deposits. The formation consists principally of clay, silt and sand and also includes stream channel, point bar, natural levee, marsh and mudflat deposits. This formation is approximately 100 feet thick and has moderate to low permeability.

SITE NAME: GOODSON AND SON TRUCKING (LANDFILL



SCALE 1:24 000

N

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
SOUNDINGS IN FEET—GULF COAST LOW WATER DATUM
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
THE MEAN RANGE OF TIDE IS 0.6 FEET

HIGHLANDS QUADRANGLE
TEXAS-HARRIS CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

EPA ID # TXD981052475

TDD# F-06-8707-10

ICF TECHNOLOGY

The Kirby Building, 1508 Main Street, Suite 900, Dallas, TX 75201

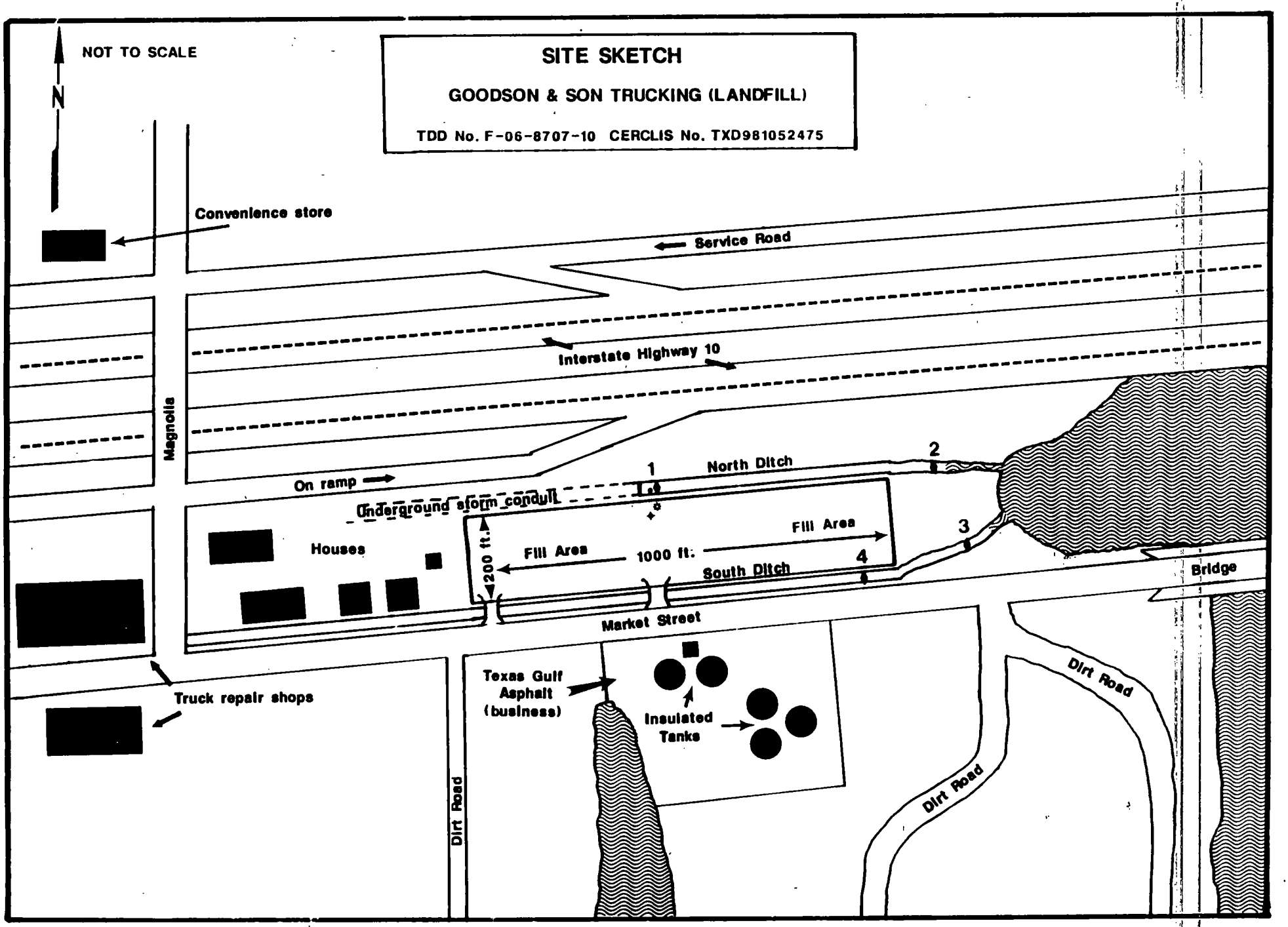
TEXAS

QUADRANGLE LOCATION

HIGHLANDS, TEX.
N2945-W9500/7.5

1982

DMA 6043 I SE-SERIES V882


NOT TO SCALE
N
SITE SKETCH
GOODSON & SON TRUCKING (LANDFILL)
TDD No. F-06-8707-10 CERCLIS No. TXD981052475
Convenience store
Service Road
Interstate Highway 10
Magnolia
On ramp
Underground storm conduit
1
North Ditch
2
3
4
Houses
200 ft.
Fill Area
1000 ft.
Fill Area
South Ditch
Bridge
Market Street
Truck repair shops
Texas Gulf Asphalt (business)
Insulated Tanks
Dirt Road
Dirt Road
Dirt Road
• Soil Sample Location
♦ Conductivity + pH Measurement Location
✦ Piezometer
✲ Telephone Company Manhole
Surface water
ICF TECHNOLOGY

ATTACHMENT B

SAMPLING PLAN
GOODSON AND SON TRUCKING (LANDFILL)
CHANNELVIEW, TX

CERCLIS NO. TXD981052475 TDD NO. F-06-8707-10

Laboratory Requirements - Routine Analytical Services, Organics and Inorganics.

Sample Locations

Station 1 - Soil sample from the fill area. Low concentration. Station 1 is also a QA/QC sample.

Station 2 - Soil/sediment sample from the north ditch near the underground storm conduit. Low concentration.

Station 3 - Soil/sediment sample from the south ditch near the fill area. Low concentration.

Station 4 - Soil sample upgradient from the north ditch. Low concentration.

Station 5 - Soil sample upgradient from the south ditch. Low concentration.

Station 6 - Water sample from the north ditch near the underground storm conduit. Low concentration. This sample is also a QA/QC sample.

Station 7 - Water sample from the north ditch in an area near the cove located east of the fill area. Low concentration.

Station 8 - Water sample from the south ditch near the fill area. Low concentration.

Station 9 - Water sample from the south ditch near the cove located east of the fill area. Low concentration.

Station 10 - Water sample located upgradient from the north ditch. Low concentration.

Station 11 - Water sample located upgradient from the south ditch. Low concentration.

Station 12 - Soil duplicate sample from the same location as Station 1.

Station 13 - Water duplicate sample from the same location as Station 6.

Station 14 - Water rinsate sample.

ATTACHMENT B

SAMPLING PLAN
GOODSON AND SON TRUCKING (LANDFILL)
CHANNELVIEW, TX

CERCLIS NO. TXD981052475 TDD NO. F-06-8707-10

Justification of Sample Locations

Station 1 is a bias grab soil sample from the fill area. This sample will determine the composition of the fill material and will act as a basis for associating the material to the ditches.

Stations 2 and 3 are bias grab soil/sediment samples. These samples will determine if the fill material has eroded into the ditches.

Stations 4 and 5 are bias grab soil samples located upgradient from the fill area. These samples are intended to show that the fill material is not located in the surrounding area.

Stations 6 and 8 are bias grab water samples located adjacent to the fill area.

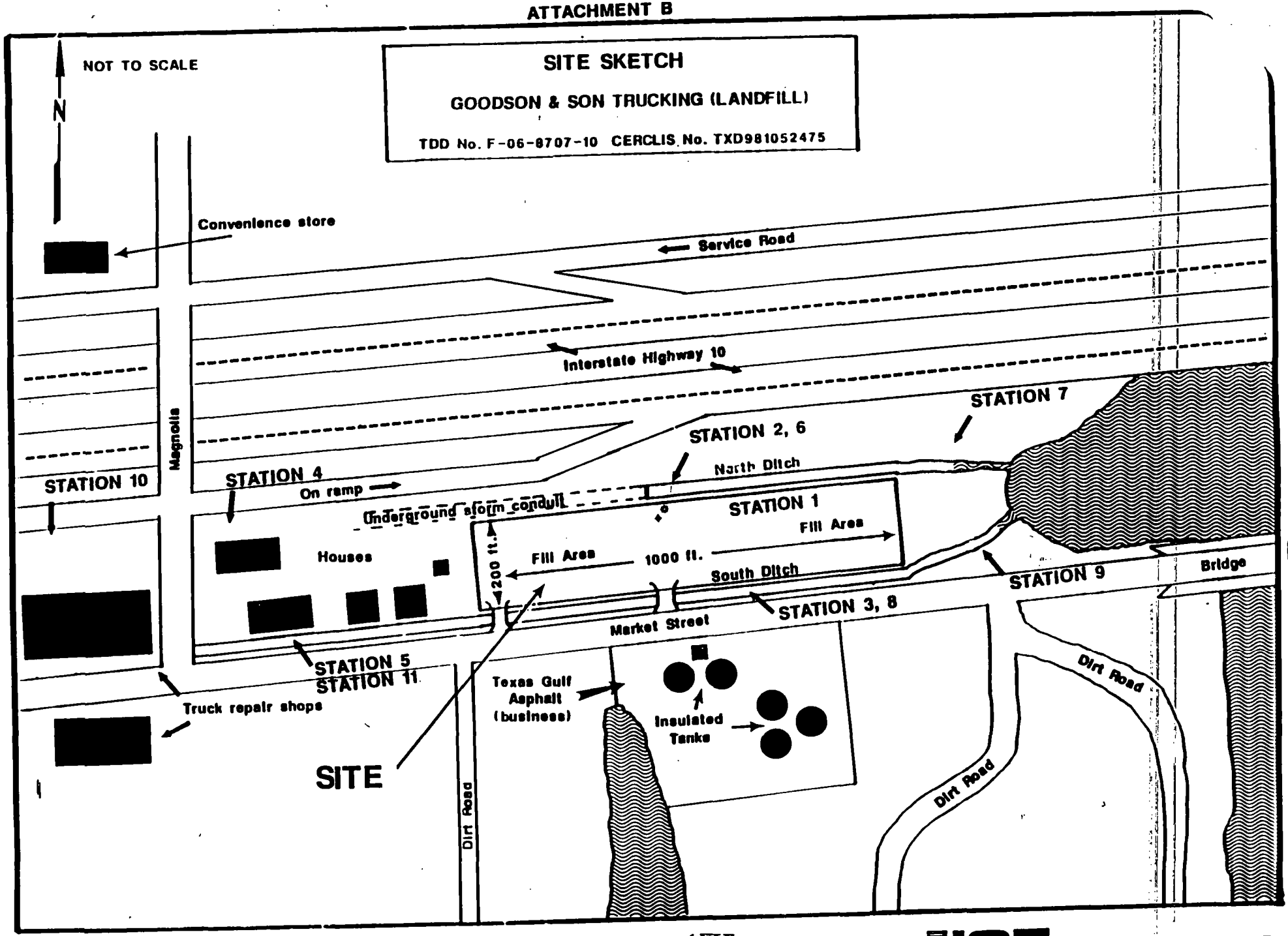
Stations 7 and 9 are bias grab water samples located near the cove. These samples will show whether high pH water is migrating from the fill area.

Stations 10 and 11 are bias grab water samples located upgradient from the fill area. These samples will show whether high pH water is associated with an upgradient source from the fill area or if the high pH water begins near the fill area.

Stations 12, 13 and 14 are required duplicate and rinsate samples.

Conductivity and pH measurements will be taken at the water sample locations. The measurement results will be compared to previous measurement data.

ATTACHMENT B



ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

Organics [illegible]

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
	CASE NO. 782[illegible] TX 2475

SAMPLERS: *(Signature)* [illegible]

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	EXTRACTABLES	VOA					REMARKS
1	[illegible]	[illegible]		X	soil/SEDIMENT, [illegible] drainage ditch, surface	1	X	X					TAG # 6-008688 Traffic Ref # FF831/MFE73
													[illegible] LOT # 65332132

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
[illegible]	[illegible]	[illegible] Fed Express [illegible]			
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*

Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks
				Federal Express Airbill # 471 [illegible] 1516 [illegible] concentration [illegible]

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

Ferrell Chemicals

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

CHAIN OF CUSTODY RECORD

PROJ. NO. | PROJECT NAME Case No. 7830
T.S.C.A.

SAMPLERS: (Signature) Terry D. Pope
Nick A. Hansen

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	METALS						REMARKS
1	8-30-87	1418 to 1201		X	SOIL/SEDIMENT, NORTH DRAINAGE DITCH, Surface	1	X	X					L-009687

Relinquished by: (Signature) Terry D. Pope / Nick A. Hansen | Date / Time 9/1/87 1300 | Received by: (Signature) Federal Express | Relinquished by: (Signature) | Date / Time | Received by: (Signature)

Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature)

Relinquished by: (Signature) | Date / Time | Received for Laboratory by: (Signature) | Date / Time | Remarks Federal Express Airbill #4216991520 LOW concentration soil

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

3-10085

DATA EVALUATION

SITE NAME Goodson & Son Trucking CASE NO. 7830 PAGE 1 of 1

The case consists of one soil sample analyzed for metals and cyanide. The following qualifications have been placed on the data after Review of the QA/QC data.

1) The Reported Results and detection limits for lead and silver are considered estimates (J) due to low matrix spike Recoveries. The actual values for TOP may be as great as 2.5 and 1.6 times the Reported values for lead and silver Respectively.

2) The holding Times for mercury and cyanide were out of control limits. The Reported Results are considered estimates TOP A (J) and are biased low.

3) All other QA/QC criteria were within control limits.

INORGANIC ANALYSIS SUMMARY FOR SOIL

SITE NAME AND NUMBER: GOODSON & SON TRUCKING (LF)
CASE NUMBER: 7830 PAGE 1 OF 1
CONCENTRATIONS IN PARTS PER MILLION (PPM)

TRAFFIC REPORT NUMBER AND STATION LOCATION.

		MFE733				
		1				
		1				
		SOIL SAMPLE IN THE NORTH DITCH NEAR CONDUIT.				
	MATRIX	SOIL				
	% MOISTURE	22	0	0	0	0
	CAS NO.					
ALUMINUM	7429-90-5	2860	0	0	0	0
ANTIMONY	7440-36-0	16U	0	0	0	0
ARSENIC	7440-38-2	6.400U	0	0	0	0
BARIUM	7440-39-3	112	0	0	0	0
BERYLLIUM	7440-41-7	0.640U	0	0	0	0
CADMIUM	7440-43-9	2.600U	0	0	0	0
CALCIUM	7440-70-2	71100	0	0	0	0
CHROMIUM	7440-47-3	19	0	0	0	0
COBALT	7440-48-4	5.800U	0	0	0	0
COPPER	7440-50-8	12	0	0	0	0
IRON	7439-89-6	7820	0	0	0	0
LEAD	7439-92-1	44J	0	0	0	0
MAGNESIUM	7439-95-4	1550	0	0	0	0
MANGANESE	7439-96-5	131	0	0	0	0
MERCURY	7439-97-6	0.130U	0	0	0	0
NICKEL	7440-02-0	7.800	0	0	0	0
POTASSIUM	7440-09-7	4320	0	0	0	0
SELENIUM	7782-49-2	3.200U	0	0	0	0
SILVER	7440-22-4	2.600U	0	0	0	0
SODIUM	7440-23-5	1350	0	0	0	0
THALLIUM	7440-28-0	6.400U	0	0	0	0
TIN	7440-31-5	14U	0	0	0	0
VANADIUM	7440-62-2	12	0	0	0	0
ZINC	7440-66-6	58	0	0	0	0
CYANIDE		0.640U	0	0	0	0
HARDNESS		0	0	0	0	0
ALKALINITY		0	0	0	0	0

R - DATA IS UNUSABLE DUE TO QA/QC OUT OF CONTROL LIMITS.
J - REPORTED CONCENTRATIONS ARE ESTIMATES DUE TO QA/QC OUT OF CONTROL LIMITS.
B - CONCENTRATION IN SAMPLE ATTRIBUTABLE TO BLANK CONTAMINATION.
U - NOT DETECTED; VALUE REPORTED IS THE DETECTION LIMIT.

DATA EVALUATION

SITE NAME Goodson & Son Trucking CASE NO. 7830 PAGE 1

The case consists of one soil sample analyzed for semi-volatile organics. The laboratory received insufficient sample to provide volatile ~~and pest~~ TOP organics and pesticide/PCB analysis. The following qualifications have been placed on the ~~data~~ after review of the associated QA/QC data.

1) The %D of the continuing calibration was out of limits for benzo(k) fluoranthene (30.5%) and benzo(b) fluoranthene (36.1%). Results should be considered as estimates (J).

2) One B/N spike recovery was out of limits for the MSD. Reported ~~results~~ should be considered as estimates (J).

3) All other QA/QC criteria were within control limits.

ORGANIC ANALYSIS SUMMARY

SITE NAME: Goodson & Son Trucking (Landfill)
CASE NUMBER 7830 PAGE 1 OF 1
CONCENTRATIONS IN PARTS PER BILLION

ORGANIC TRAFFIC NUMBERS
AND SAMPLE STATION LOCATION DESCRIPTIONS

	ff831			
	soil sample			
	taken in			
	north			
	ditch			

		MATRIX	soil				
COMPOUND	CAS#/SCAN	CLASS					
FLUORANTHENE	206-44-0	ABN/1	740J				
NAPHTHALENE	91-20-3	ABN/1	890J				
BIS(2-ETHYLHEXYL)PHTHALAT	117-81-7	ABN/1	740				
BENZO(A)ANTHRACENE	56-55-3	ABN/1	1200J				
BENZO(A)PYRENE	50-32-8	ABN/1	1200J				
BENZO(B)FLUORANTHENE	205-99-2	ABN/1	2400J				
CHRYSENE	218-01-9	ABN/1	1400J				
PHENANTHRENE	85-01-8	ABN/1	820J				
DIBENZOFURAN	132-64-9	ABN/2	1200J				
2-METHYLNAPHTHALENE	91-57-6	ABN/2	2800J				
not identified	210	ABN/3	10000J				
benzene, ethenyl-	253	ABN/3	2000J				
ALKANE	722	ABN/3	2700J				
ALKANE	783	ABN/3	1500J				
ALKANE	801	ABN/3	5800J				
ALKANE	848	ABN/3	3000J				
ALKANE	875	ABN/3	7900J				
not identified	912	ABN/3	3000J				
naphthalene, trimethyl- +	920	ABN/3	1600J				
ALKANE	978	ABN/3	4000J				
ALKANE	1011	ABN/3	15000J				
ALKANE	1074	ABN/3	6100J				
ALKANE	1080	ABN/3	2700J				
ALKANE	1110	ABN/3	1400J				
ALKANE	1133	ABN/3	7800J				
ALKANE	1190	ABN/3	3800J				
ALKANE	1244	ABN/3	3200J				

1. PRIORITY POLLUTANT
2. SPECIFIED HAZARDOUS SUBSTANCE
3. TENTATIVELY IDENTIFIED

VOA - VOLATILE
ABN - ACID/BASE/NEUTRAL
PES - PESTICIDE

B - THE ANALYTE IS FOUND IN THE LAB BLANK
J - INDICATES AN ESTIMATED VALUE FOR TENTATIVELY IDENTIFIED COMPOUNDS OR COMPOUNDS FOUND BELOW CONTRACT DETECTION LIMIT
P - PRESENT IN SAMPLE, BUT NOT REPORTED BY LAB
C - CONFIRMED BY MASS SPECTRAL DATA

CERCLIS no. TXD 980524475 TDD no. F-06-8707-10

page 1 of 17

PHOTO # 1

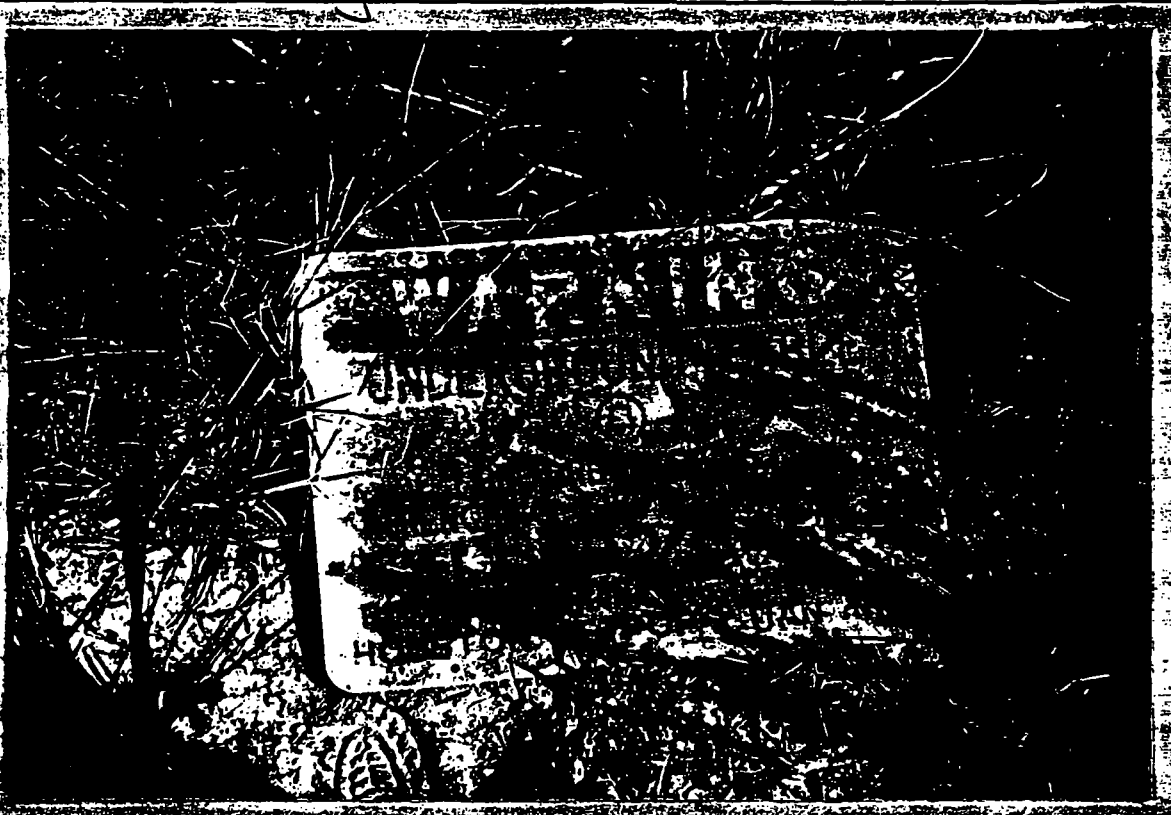
PHOTOGRAPHER M. Hansen WITNESS Pierce DATE 8/3/87 TIME 09:43 DIRECTION West

COMMENTS: distressed vegetation on I-10 right of way

PHOTO # 2

PHOTOGRAPHER M. Hansen WITNESS Pierce DATE 8/3/87 TIME 09:45 DIRECTION Down

COMMENTS: Broken telephone cable sign. Notice powdery material near bottom of sign.



CERCLIS NO. TXD981052475

TDD NO. F-06-8707-10

Photographer / ~~ID~~

Rob Hansen Terry D. Pierce

Date / Time / Direction

8/3/87 09:50 hours NW TO NE

Comments: photos 3 and 4

PANARAMA of NORTH drainage ditch.

NOTICE coffee-colored WATER.

PANARAMA page 1 of 3

Page 2 of 17

CERCLIS NO. TXD981052475

TDD NO. F-06-8707-10

Photographer / 1 / 2

Mark Harben / Terry D. Pierce

Date / Time / Direction

8/3/87 TOP 09:50 HOURS NW TO NE

Comments: photos 5 and 6

PANARAMA of NORTH DRAINAGE DITCH.

PANARAMA page 2 of 3

CERCLIS no. TXD980524715

TDD no. F-06-8707-10

Mark Hansen Jerry D. Preece

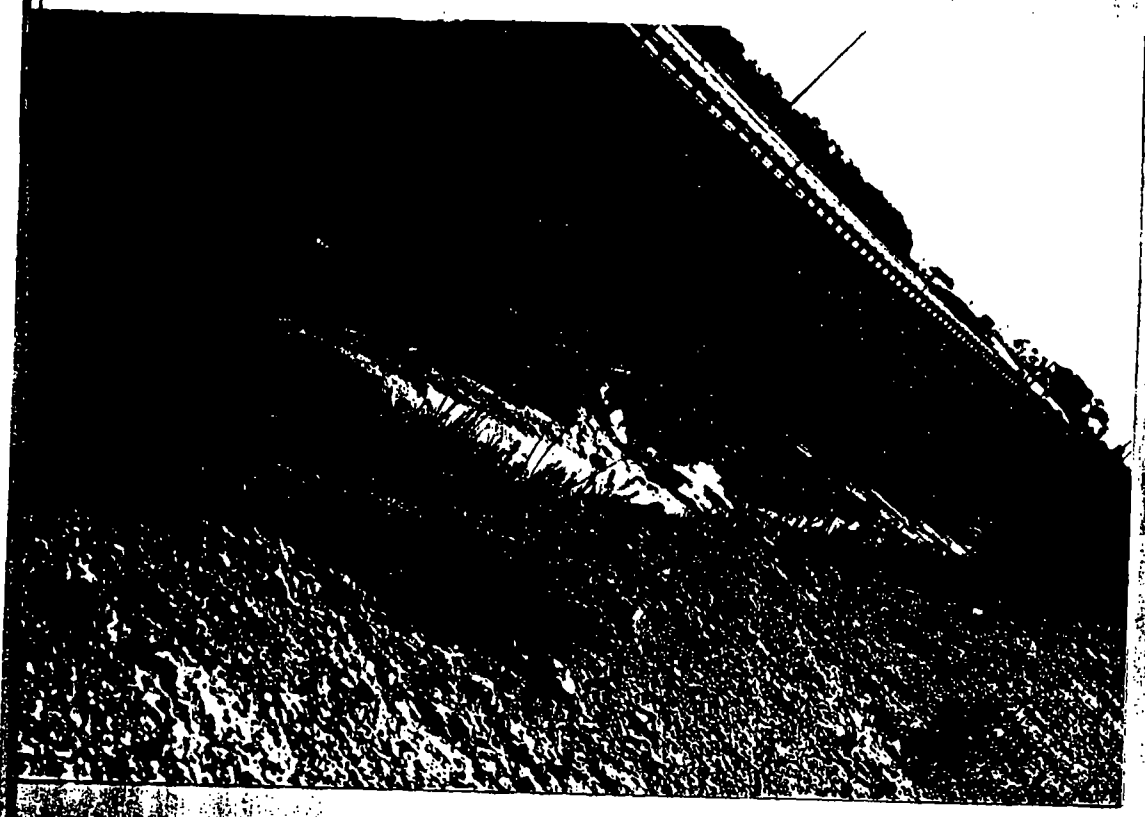
Date / Time / Direction

8/3/87 09:50 hours NW TO NE

Comments: photo 7

PANARAMA of north drainage ditch.

PANARAMA page 3 of 3

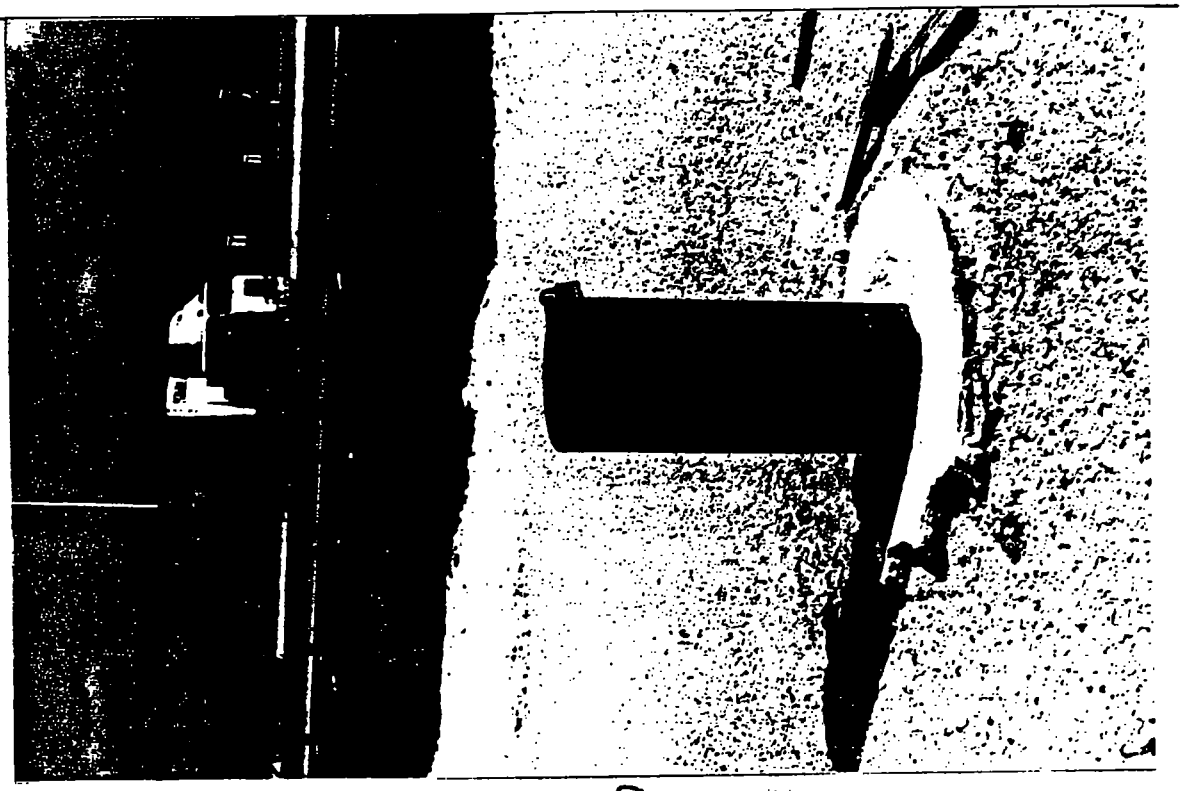


ERCLIS NO. TXD981052475 TDD NO. F-06-8707-10

PHOTO # 8

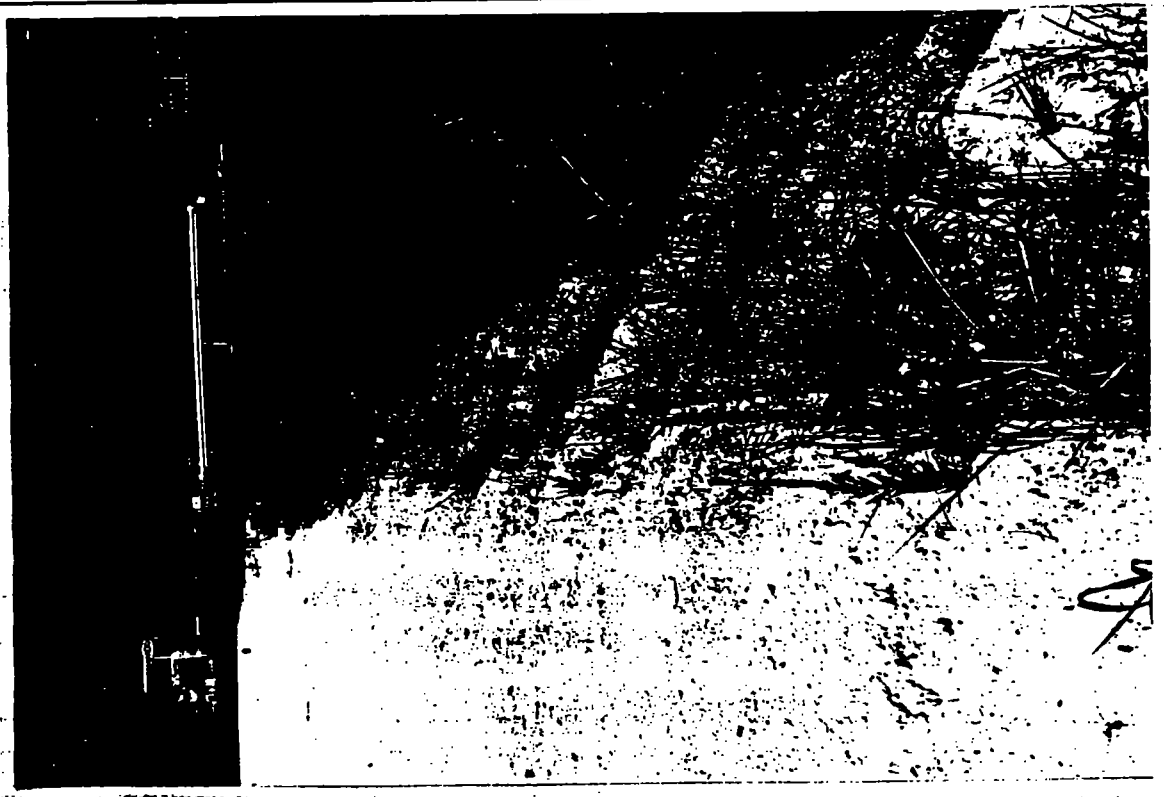
PHOTOGRAPHER M. Harper WITNESS Pierce DATE 8/3/87 TIME 09:54 DIRECTION North

COMMENTS: Locked well with piezometer.



PHOTOGRAPHER M Harper WITNESS Pierce PHOTO # 9 DATE 8/3/87 TIME 10:00 DIRECTION WEST

COMMENTS: Erosion into north ditch from fill area



CERCLIS NO. TXD981052475 TDD NO. F-06-8707-10

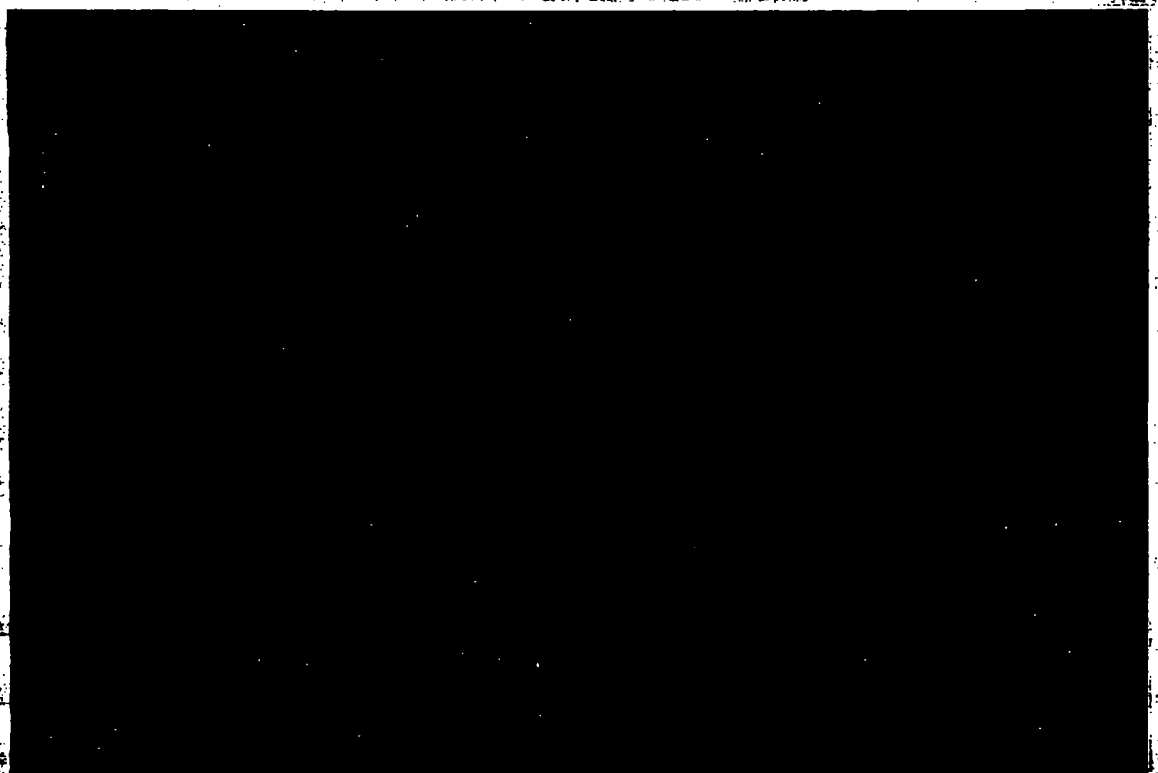
PHOTO # 10

PHOTOGRAPHER M. Harzer WITNESS Pierce DATE 8/3/87 TIME 10:05 DIRECTION Down

COMMENTS: Measurement location no. 4 located in south ditch (See site sketch)

PHOTOGRAPHER M. Harzer WITNESS Pierce PHOTO # 11 DATE 8/3/87 TIME 10:08 DIRECTION Down

COMMENTS: Animal tracks found on fill area. Notice powdery texture of fill material.



ERLIS no. TXD981052475 TDD no, F-06-8707-10

PHOTO # 12

PHOTOGRAPHER M. Hansen WITNESS Pierce DATE 8/3/87 TIME 11:48 DIRECTION WEST

COMMENTS: Sampling AT measurement location no. 1 (See site sketch).

PHOTOGRAPHER M. Hansen WITNESS Pierce PHOTO # 13 DATE 8/3/87 TIME 11:48 DIRECTION WEST

COMMENTS: Sampling AT measurement location no. 1 (See site sketch).

CERCLIS no. TXD981052475 TDD no. F-06-8707-10

PHOTO # 14

PHOTOGRAPHER J. Hansen WITNESS Pierce DATE 8/3/87 TIME 12:00 DIRECTION South

COMMENTS: Sampling at measurement location no. 2 (See site sketch)

PHOTOGRAPHER J. Hansen WITNESS Pierce PHOTO # 15 DATE 8/3/87 TIME 12:00 DIRECTION South

COMMENTS: Sampling at measurement location no. 2 (See ~~site~~ top site sketch).

TDD No. F-06-8707-10

Mash Harbor Terry Pierce

Date / Time / Direction

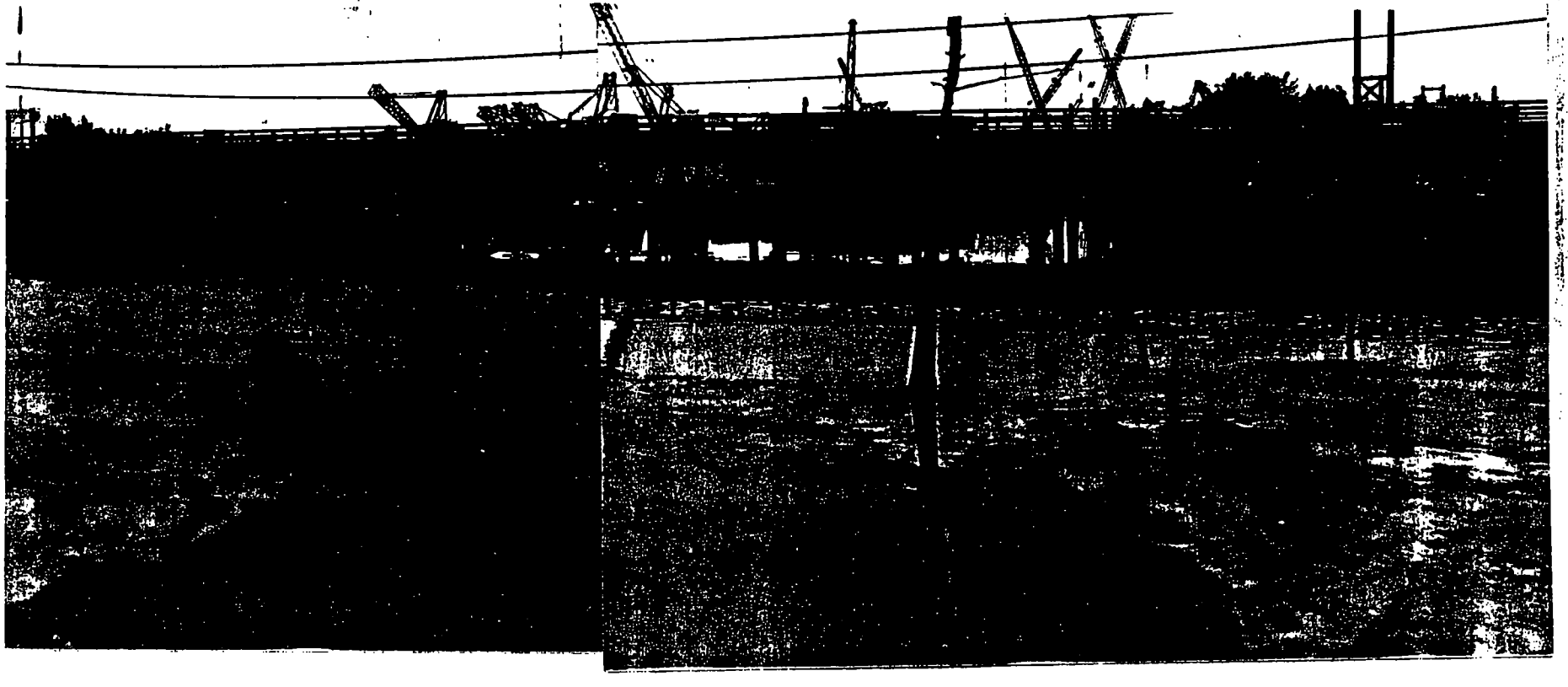
8/3/87 12:55 hours W TO ESE

Comments: photos 22 and 21

PANARAMA of Old River Slough (cove).

photo series taken from right to left

PANARAMA page 1 of 4



CERCLIS no. TXD 981052475

TDD no F-06-8707-10

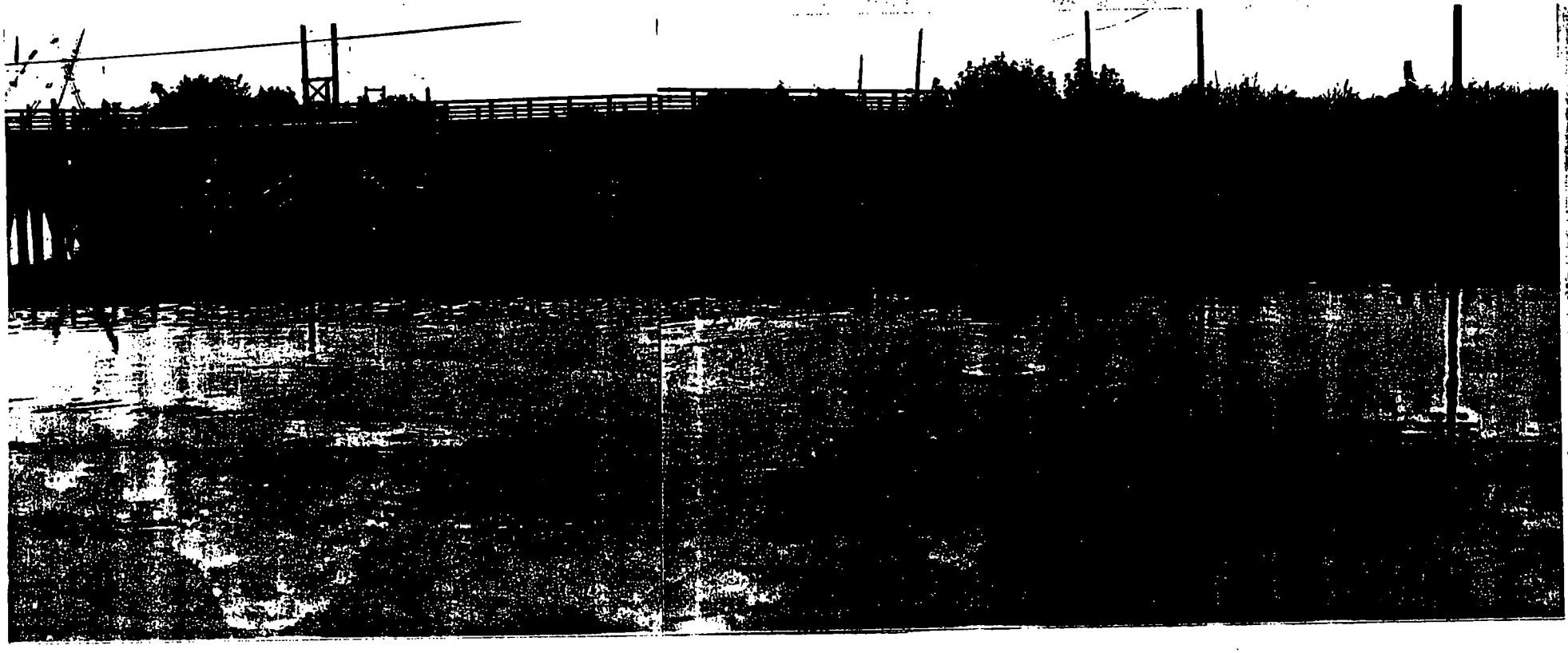
Photographer / Initials: Mark Hansen / Terry D. Pierce

Date / Time / Direction: 8/3/87 12:55 hours W TO ESE

Comments: photos 20 and 19 PANARAMA of Old River Slough (cove). photo series taken from Right to left.

page 2 of 4

PANARAMA



CERCLIS NO. ~~TDD~~ TXD981052475

TDD NO. F-06-8707-10

Photographer / [illegible]
Mark Hansen Terry D. Pierce

Date / Time / Direction
8/3/87 12:55 hours W TO ESE

Comments: photos 18 and 17
PANARAMA of Old River Slough (cove).
photo series taken from RIGHT TO left.
PANARAMA page 3 of 4

CERCLIS NO. TXD981052475

TDD NO. F-06-8707-10

Photographer / I B

Mark Harper / Jerry D. Pierce

Date / Time / Direction

8/3/87 12:55 hours W TO ESE

Comments: photos TOP 16

PANARAMA of Old River Slough (cove).

photo series TAKEN from right TO left

PANARAMA page 4 of 4

CERCLIS NO. TXD980584913

TDD NO. F-06-8707-10

Photographer / #1

Kathy Hansen Terry D. Peece

Date / Time / Direction

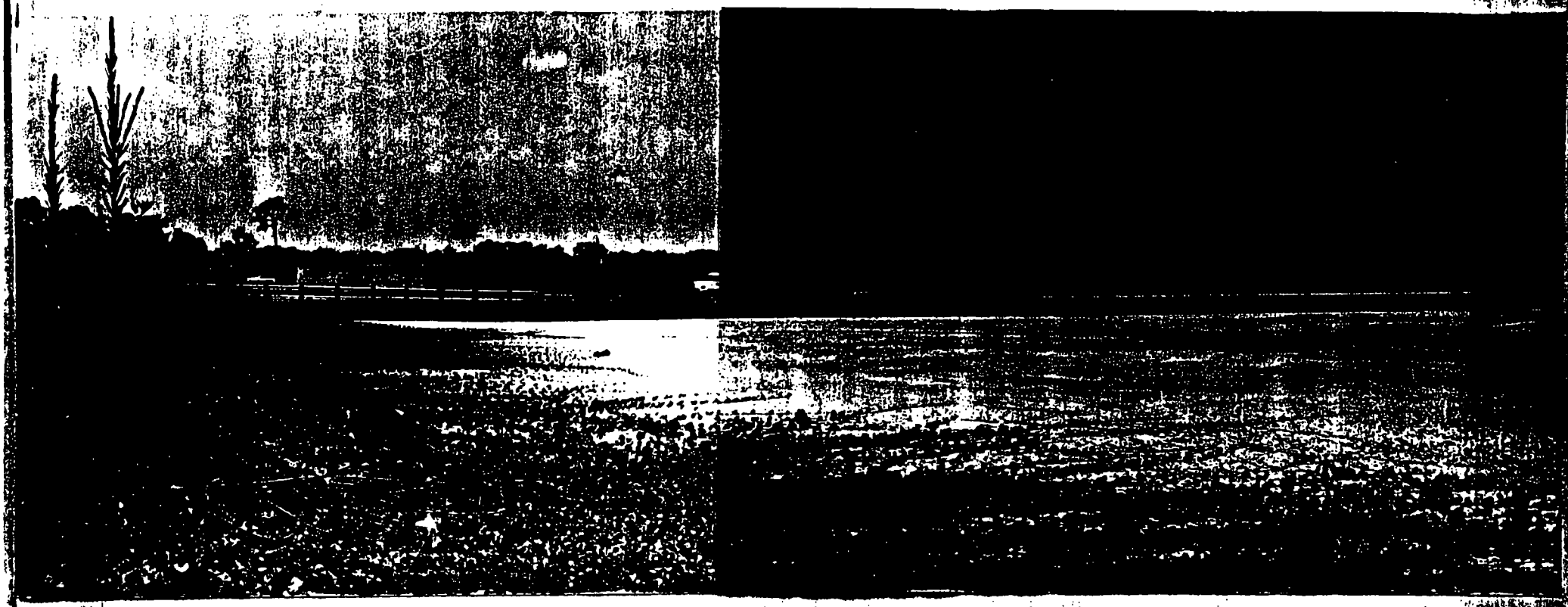
8/3/87 13:30 hours NORTH TO EAST

Comments: photos 23 - ~~26~~ TDD 24

PANORAMA of fill AREA

PANORAMA

Page 1 of 2



CERCLA NO. TXD 980 794 793

TDD NO. F-06-8707-10

Photographer(s): Mark Hansen Terry D. Pierce

Date / Time / Direction

8/3/87 13:30 hours NORTH TO EAST

Comments: photos 25 and 26

PANARAMA of fill AREA

PANARAMA page 2 of 2

CERCLIS no. TXD981052475

TDD no. F-06-8707-10

Photographer / I B

Jack Hanson Terry D. Pierce

Date / Time / Direction

8/3/87 13:45 hours WEST TO EAST

Comments: photos 27 and 28

PANARAMA of measurement location no. 3

See site sketch

PANARAMA page 1 of 3

CERCLIS NO. TXD981058475

TDD NO. F-06-8707-10

Photographer / Witness

Mark Hansen Terry D. Pierce

Date / Time / Direction

8/3/87 13:45 hours W TO EAST

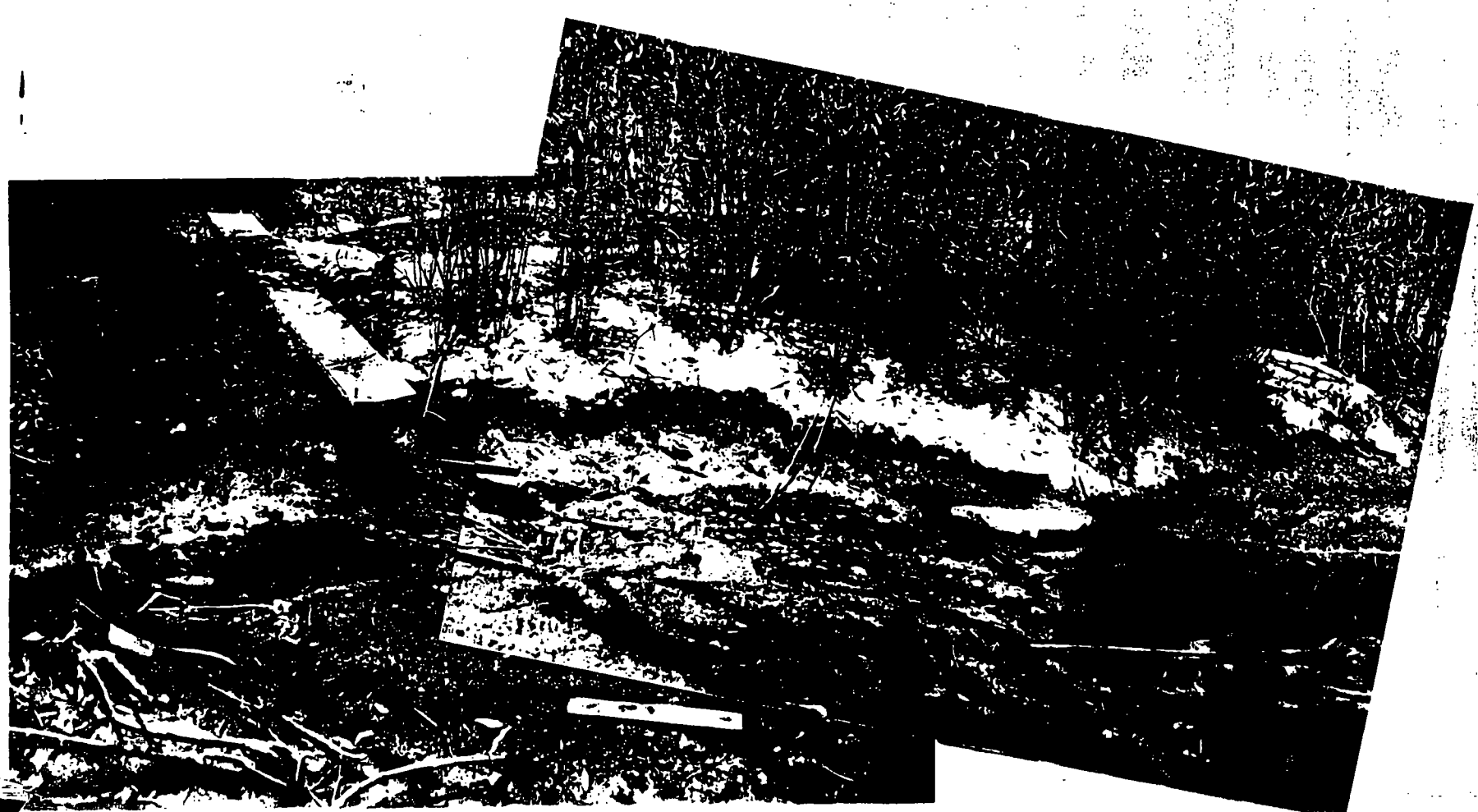
Comments: photos 29 and 30

PANAPAMA of measurement location no. 3

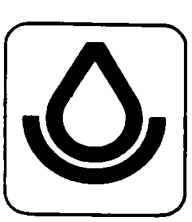
See site sketch

page 2 of 3

PANAPAMA



SOIL SURVEY OF
Harris County, Texas



United States Department of Agriculture
Soil Conservation Service
In cooperation with the
Texas Agricultural Experiment Station and the
Harris County Flood Control District

Addicks loam makes up 20 to 85 percent of the complex, Urban land 10 to 60 percent, and other soils 5 to 20 percent. The areas are so intricately mixed that it was not practical to separate them at the mapping scale for this survey.

The Addicks soil has a surface layer of friable, neutral, black loam about 11 inches thick. The layer below that is friable, neutral, dark gray loam about 12 inches thick. The next layer is about 26 inches thick and consists of friable, moderately alkaline, light gray loam that is about 20 percent, by volume, visible calcium carbonate. The layer at a depth of about 49 inches is firm, moderately alkaline, light gray loam that has distinct yellow and yellowish brown mottles and is about 5 percent visible calcium carbonate.

Urban land consists of soils that support buildings and other urban structures that have covered or altered the soils so that classification is not practical. Typical structures are single- and multiple- unit dwellings, streets, schools, churches, parking lots, office buildings, and shopping centers less than 40 acres in size. In places Urban land consists of small areas of Addicks loam that has been altered by cutting, filling, and grading. Fill material has altered the soil in places. In some areas the entire profile is covered with 6 to 24 inches of fill material. Soils in the older areas that are drained by road ditches show less evidence of alteration.

Included with this unit in mapping are a few areas of Clodine, Gessner, Bernard, and Midland soils. These soils are unaltered in places.

This mapping unit has moderate to severe limitations for urban development. Poor drainage is the greatest limitation. There are no limitations for landscaping or for gardening. Chlorosis is common in areas where cuts have been made. Most of the acreage was formerly in cropland or native pasture.

Am—Aldine very fine sandy loam. This is a nearly level soil in broad, oblong and oval, wooded areas. The surface is plane to slightly convex. The slope is 0 to 1 percent, but averages about 0.6 percent. Areas of this soil average 200 acres, but some are several hundred acres in size.

The surface layer is friable, medium acid, dark grayish brown very fine sandy loam about 5 inches thick. The layer below that is friable, medium acid, grayish brown very fine sandy loam about 5 inches thick. It tongues into a layer of friable, very strongly acid, yellowish brown loam about 9 inches thick. The next layer, about 11 inches thick, is firm, very strongly acid, gray clay that has mottles of yellowish brown and red. Below that, extending to a depth of 60 inches, is a layer of firm, slightly acid, light gray clay loam that is less mottled with depth.

Included in some mapped areas of this soil are small areas of Atasco, Bissonnet, Aris, Hockley, Segno, and Ozan soils. These soils make up less than 10 percent of any mapped area. Low, sandy, circular mounds are common in a few places. These rise 6 to 30 inches above the surface and are 15 to 50 feet in diameter.

This Aldine soil is used mainly for timber and woodland. The native vegetation is chiefly pine, hardwoods, sedge, beaked panicum, longleaf uniola, and little bluestem. Some small open or cleared areas are used as pasture or home gardens.

This soil is somewhat poorly drained. Surface runoff is slow, and permeability is very slow. The available water capacity is high. This soil is saturated at a depth of 20 to 30 inches during cool months and in periods of excessive rainfall.

Cultivated areas of this soil are difficult to manage. Fertilizer, lime, and drainage systems are beneficial to pasture and row crops. Capability unit IIIw-1; rice group 2; pasture and hayland group 8A; woodland suitability group 2w9; Flatwoods woodland grazing group.

An—Aldine-Urban land complex. This is a nearly level to gently sloping complex in metropolitan areas and in rural areas where the population is increasing. This mapping unit is of minor extent. Areas are irregular in shape and generally range from 30 to 250 acres in size. One area, however, covers 1,200 acres. Boundaries commonly coincide with the outer limits of subdivisions and built-up areas. The slope is mainly 0 to 2 percent but ranges to 3 percent. In a few places along drainageways the slope is 5 percent. Native pine and hardwoods are common in most areas.

The Aldine soil makes up 25 to 75 percent of this complex, Urban land 10 to 70 percent, and other soils 5 to 20 percent. The areas are so intricately mixed that it was not feasible to separate them at the mapping scale for this survey.

The surface layer of the Aldine soil is friable, medium acid, dark grayish brown very fine sandy loam about 5 inches thick. The layer below that is friable, medium acid, grayish brown very fine sandy loam about 5 inches thick. It tongues into a layer of friable, very strongly acid, yellowish brown loam about 9 inches thick. The next layer, about 11 inches thick, is firm, very strongly acid, gray clay that has mottles of yellowish brown and red. Below that, extending to a depth of 60 inches, is a layer of firm, slightly acid, light gray clay loam that has less mottles with depth.

Urban land consists of soils that have been altered or obscured by buildings and other urban structures, making their classification impractical. Typical structures are single- multiple-unit dwellings, garages, sidewalks, patios, driveways, streets, schools, churches, shopping centers, office buildings, paved parking lots, and industrial parks. Included with Urban land in mapping are small areas of the Aldine soil that have been altered by cutting, filling, and grading. In places, 6 to 24 inches of fill material has been added to improve drainage.

Included with this unit in mapping are a few areas of Atasco, Bissonnet, Aris, Hockley, Segno, Vamont, and Ozan soils. These soils are unaltered in places.

This mapping unit has moderate to severe limitations for urban development. It has severe limitations for use as septic tank filter fields because the clayey subsoil is

very slowly permeable and has a high shrink-swell potential and a high corrosion potential. The areas were once in timber, so homeowners may have problems with tree stumps and roots.

Ap—Aris fine sandy loam. This is a nearly level soil in broad areas on the coastal prairie. The areas generally are several hundred acres in size and slightly lower on the landscape than those of adjacent or surrounding soils. The surface is plane to slightly concave. The slope averages about 0.2 percent.

The surface layer is friable, neutral, dark grayish brown fine sandy loam about 7 inches thick. The layer below that is friable, slightly acid, grayish brown fine sandy loam that extends to a depth of 21 inches. The next layer, extending to a depth of 28 inches, is firm, medium acid, gray sandy clay loam that contains tongues and interfingers. The layer below that, extends to a depth of 46 inches and is very firm, strongly acid, dark gray clay mottled with red and strong brown. The next layer is very firm, medium acid, gray clay that extends to a depth of 60 inches, where it grades to very firm, slightly acid, light gray clay loam.

Included with this soil in mapping are small areas of Katy, Gessner, Clodine, Ozan, Wockley, and Addicks soils. These soils make up less than 10 percent of the mapped acreage. There are low, sandy, circular mounds in a few undisturbed areas.

This soil is used mainly for rice, native pasture, and improved pasture. A few areas are used for corn and grain sorghum. The native vegetation is chiefly longleaf uniola, beaked panicum, little bluestem, indiangrass, greenbrier, berryvines, forbs, and annual weeds. Grasses for improved pastures mainly are common bermudagrass, Coastal bermudagrass, and Pensacola bahiagrass.

This soil is poorly drained. Surface runoff and internal drainage are slow. Permeability is very slow. A perched water table is above the tongued layer in the cool months or in periods of excess rainfall. The available water capacity is medium.

Poor drainage is the main limitation. Fertilizer, lime, and drainage systems are beneficial to crops and pasture. Capability unit IIIw-1; rice group 2; pasture and hayland group 8E; Loamy Prairie range site; woodland suitability group 2w8; Flatwoods woodland grazing group.

Ar—Aris-Gessner complex. This is a nearly level complex in large, irregular areas that are 100 to 1,000 acres in size. The complex consists of 30 to 50 percent Aris soil, 20 to 30 percent Gessner soil, and 20 to 30 percent other soils. The Aris soil is nearly level and slightly higher on the landscape than adjacent soils. The Gessner soil is in depressions that generally are either long, narrow meanders or circular in shape. The soils in this complex are so intricately mixed that separation was not feasible at the mapping scale for this survey. Furthermore, in leveling some areas for farming, part of the surface layer of the Aris soil has been distributed over the lower lying Gessner soil.

The Aris soil has a surface layer of friable, neutral, dark grayish brown fine sandy loam about 7 inches thick. The layer below that is friable, slightly acid, grayish brown fine sandy loam that extends to a depth of 21 inches. The next layer, extending to a depth of 28 inches, is firm, medium acid, gray sandy clay loam that tongues and interfingers. The layer below that extends to a depth of 46 inches and is very firm, strongly acid, dark gray clay mottled with red and strong brown. The next layer is very firm, medium acid, gray clay that extends to a depth of 60 inches, where it grades to very firm, slightly acid, light gray clay loam.

The Gessner soil has a surface layer of friable, slightly acid, dark grayish brown loam about 7 inches thick. The layer below that is about 9 inches thick and is friable, slightly acid, grayish brown loam. It tongues into the next layer, which is friable, neutral, dark gray loam that is slightly more clayey. That layer extends to a depth of 34 inches. The layer below that is friable, moderately alkaline, light brownish gray loam about 19 inches thick. Below that, extending to a depth of 84 inches, is a layer of firm, moderately alkaline, light gray sandy clay loam that has distinct mottles of yellowish brown and brownish yellow.

Included in mapping are small areas, less than 10 acres in size, of Clodine, Wockley, Ozan, and Katy soils.

The soils making up this complex are used mainly for rice, native pasture, and improved pasture. The native vegetation is chiefly andropogons, panicums, paspalums, and annual weeds. Grasses for improved pasture are mainly common bermudagrass, Coastal bermudagrass, and Pensacola bahiagrass.

The soils are poorly drained and are saturated with water part of the year. Excess water ponds on the Gessner soil and for long periods. Permeability is moderate to very slow. The available water capacity is medium.

Poor drainage is the main management concern. Drainage, land smoothing, and fertilization are beneficial practices for crops and pasture. Capability unit IIIw-1; rice group 2; pasture and hayland group 8E; Loamy Prairie range site, Aris soil, and Lowland range site, Gessner soil; woodland suitability group 2w8; Flatwoods woodland grazing group.

As—Aris-Urban land complex. This is a nearly level complex in broad, irregular areas that are 30 to 1,000 acres in size. Slopes range from 0 to 1 percent but average about 0.3 percent. Wooded areas are generally the result of encroachment or of the planting of trees during urban development.

The Aris soil makes up 20 to 75 percent of the complex; Urban land 10 to 75 percent, and other soils 5 to 20 percent. The areas are so intricately mixed that separation was not practical at the mapping scale for this survey.

The surface layer of the Aris soil is friable, neutral, dark grayish brown fine sandy loam about 7 inches thick. The layer below that is friable, slightly acid, grayish brown fine sandy loam that extends to a depth of 21

cool months and in periods of excess rainfall. Surface runoff is slow to very slow. Internal drainage is slow. Permeability is very slow. The available water capacity is high.

Poor surface drainage is the major limitation. Fertilizer, lime, and artificial drainage are beneficial to pasture and crops. Capability unit IIIw-1; rice group 2; pasture and hayland group 8A; Loamy Prairie range site; woodland suitability group 2w8; Sandy Loam woodland grazing group.

Kn—Kenney loamy fine sand. This is a nearly level to gently sloping soil along ridges and natural drainageways. Soil areas are oblong and irregular and average about 100 acres, but some are 500 acres in size. The surface is plane to slightly convex. Slopes are mainly 0 to 1 percent, but the range is 0 to 3 percent.

The surface layer is about 9 inches thick. It is very friable, slightly acid, dark grayish brown loamy fine sand in the upper 5 inches and loose, slightly acid, dark brown loamy fine sand in the lower 4 inches. The layer below that is loose, medium acid, light yellowish brown loamy fine sand that extends to a depth of 56 inches. The next layer, extending to a depth of 80 inches, is friable, strongly acid, strong brown sandy clay loam.

Included with this soil in mapping are small areas of Hockley, Segno, and Boy soils. These soils make up less than 15 percent of the mapped area.

This soil is used mainly for woodland grazing. A few areas are used for timber, improved pasture, and cultivated crops. Loblolly pine and oak are common in most areas. Native grasses are mainly andropogons and panicums. Coastal bermudagrass, Pensacola bahiagrass, and weeping lovegrass are the principal improved pasture plants. A few areas are used for peanuts and watermelons, but inadequate moisture and fertility are limitations. A few areas of this soil are mined for sand for use in construction.

This soil is well drained. Surface runoff is very slow. Internal drainage is rapid, and permeability is moderately rapid. The available water capacity is low. Adequate moisture and improved fertility are needed for crops. Capability unit IIIs-1; pasture and hayland group 9B; Sandy Prairie range site; woodland suitability group 3s2; Sandy woodland grazing group.

Kü—Kenney-Urban land complex. This complex is made up of nearly level to gently sloping soils along ridges and natural drainageways. It consists of built-up areas and new subdivisions. Soil areas are oblong and irregular and average about 50 acres, but some are 200 acres in size. The surface is plane to convex. Slopes range from 0 to 3 percent, but the average is 1 percent.

Kenney soils make up about 30 to 80 percent of this unit; Urban land, about 10 to 50 percent; and other soils, about 10 to 15 percent. The soils of this unit are so intricately mixed that separation was not feasible at the scale used in mapping.

The surface layer of the Kenney soils is very friable, slightly acid, dark grayish brown loamy fine sand in the upper 5 inches and loose, slightly acid, dark brown loamy fine sand in the lower 4 inches. The layer below that is loose, medium acid, light yellowish brown loamy fine sand that extends to a depth of 56 inches. The next layer, extending to a depth of 80 inches, is friable, strongly acid, strong brown sandy clay loam.

Urban land consists of soils that have been altered or covered by buildings and other urban structures. The main structures are single unit dwellings, garages, sidewalks, patios, driveways, streets, schools, churches, and paved parking lots. Urban land also consists of areas that have been altered by cutting, filling, or grading. Classification of all of these areas is not practical.

Included with this complex in mapping are Hockley, Segno, and Boy soils.

This mapping unit has moderate limitations for urban development. The thick sandy surface layer is low in fertility and is droughty. Lawns and shrubs are difficult to establish; adequate water and fertilizer are needed. The dry loose sand is unstable for traffic. Streets and roads need to be oiled, paved, or graveled.

LcA—Lake Charles clay, 0 to 1 percent slopes. This is a nearly level soil in broad, irregular areas that are 50 to several hundred acres in size. Slopes average 0.2 percent. Undisturbed areas are characterized by gilgai microrelief, which is destroyed in cultivation. In undisturbed areas, a mulch of fine, discrete, very hard aggregates is on the surface.

In the center of microdepressions, the surface layer is about 36 inches thick. In the upper 22 inches it is very firm, neutral, black clay. In the lower 14 inches it is very firm, mildly alkaline, very dark gray clay. The layer below that is about 16 inches thick and consists of very firm, mildly alkaline, dark gray clay that has intersecting slickensides. The next layer, to a depth of 74 inches, is very firm, mildly alkaline, gray clay that is mottled olive brown and yellowish brown.

Included with this soil in mapping are small areas of Beaumont, Bernard, Midland, Addicks, and Vamont soils and a few areas of this soil that are adjacent to Harris clay and that are slightly saline. These inclusions make up less than 10 percent of any mapped area.

This soil is used for cultivated crops, improved pasture, and native pasture. Rice is the main cultivated crop, but some areas are used for corn, cotton, and grain sorghum. Principal improved pasture plants are bermudagrass and dallisgrass. Native pastures support andropogons and paspalums. Live oak and huisache are common in places.

This soil is somewhat poorly drained. Surface runoff is very slow. Permeability and internal drainage are very slow. The available water capacity is high. When this soil is dry, deep wide cracks form on the surface. Water enters rapidly through the cracks, but it enters very slowly when the soil is wet and the cracks are sealed.

Favorable structure and tilth are difficult to maintain in this soil, and the moisture range in which the soil can be cultivated is narrow. Surface crusts and plowpans are common in cultivated fields. Runoff is very slow in large,

TABLE 17.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[Dashes indicate data were not available. The symbol < means less than; > means greater than. The erosion tolerance factor (T) is for the entire profile. Absence of an entry means data were not estimated]

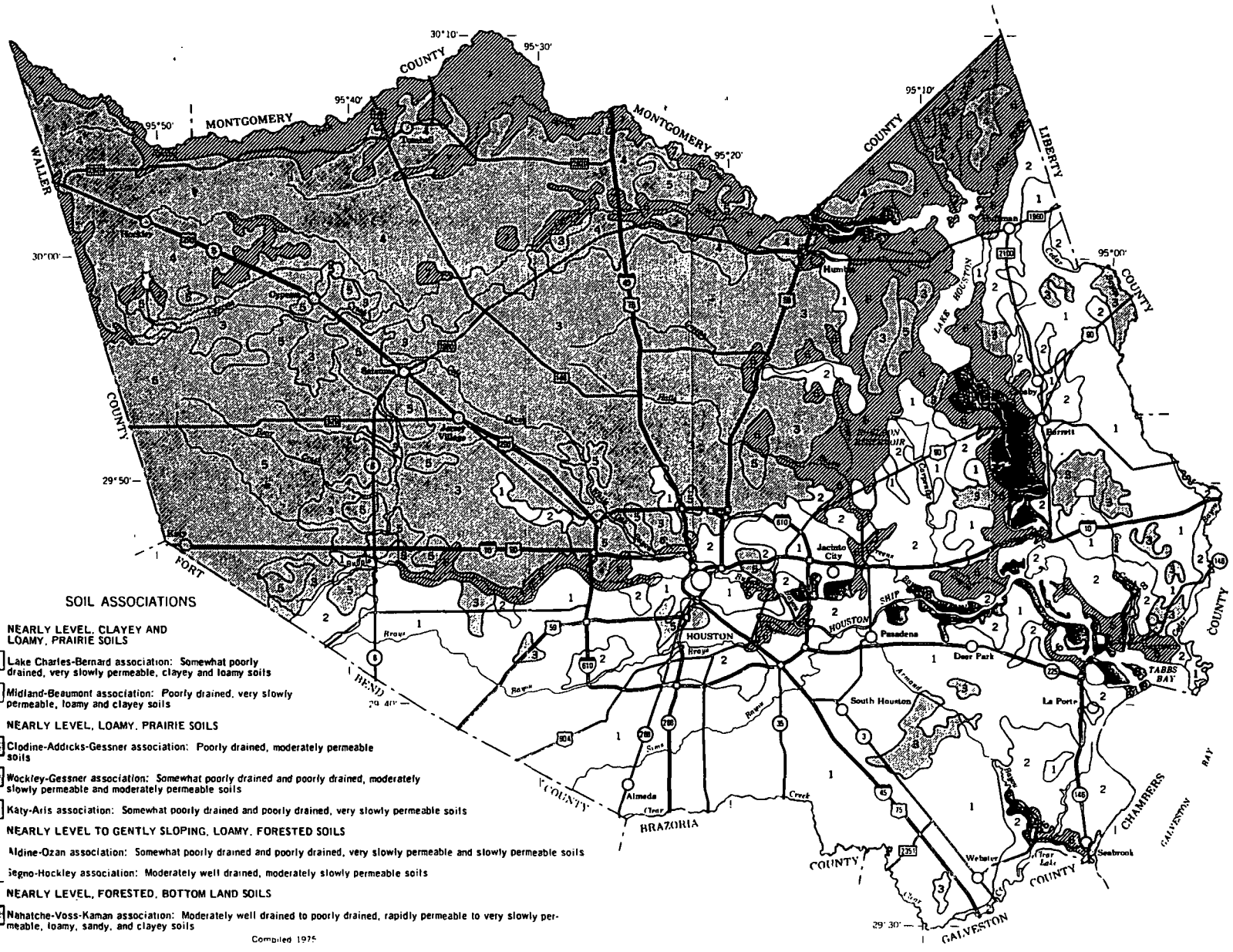
Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors	
						Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH					
Addicks:									
Ad	0-11	0.6-2.0	0.15-0.24	6.1-8.4	Low	High	Low	0.32	5
	11-49	0.6-2.0	0.15-0.24	6.6-8.4	Low	High	Low	0.37	
	49-78	0.6-2.0	0.15-0.24	6.6-8.4	Moderate	High	Low	0.37	
[1]Ak:									
Addicks part	0-11	0.6-2.0	0.15-0.24	6.1-8.4	Low	High	Low	0.32	5
	11-49	0.6-2.0	0.15-0.24	6.6-8.4	Low	High	Low	0.37	
	49-78	0.6-2.0	0.15-0.24	6.6-8.4	Moderate	High	Low	0.37	
Urban land part.									
Aldine:									
Am	0-10	0.6-2.0	0.13-0.20	4.5-6.0	Low	High	High	0.43	5
	10-19	0.2-0.6	0.13-0.20	4.5-6.0	Moderate	High	High	0.43	
	19-60	<0.06	0.15-0.20	4.5-6.5	High	High	High	0.32	
[1]An:									
Aldine part	0-10	0.6-2.0	0.13-0.20	4.5-6.0	Low	High	High	0.43	5
	10-19	0.2-0.6	0.13-0.20	4.5-6.0	Moderate	High	High	0.43	
	19-60	<0.06	0.15-0.20	4.5-6.5	High	High	High	0.32	
Urban land part.									
Aris:									
Ap	0-21	0.6-2.0	0.11-0.15	5.6-7.3	Low	High	Moderate	0.37	5
	21-28	0.2-0.6	0.12-0.17	5.1-6.5	Moderate	High	Moderate	0.32	
	28-60	<0.06	0.12-0.18	5.1-6.5	High	High	Moderate	0.32	
	60-78	<0.06	0.12-0.18	5.1-7.3	High	High	Moderate	0.32	
[1]Ar:									
Aris part	0-21	0.6-2.0	0.11-0.15	5.6-7.3	Low	High	Moderate	0.37	5
	21-28	0.2-0.6	0.12-0.17	5.1-6.5	Moderate	High	Moderate	0.32	
	28-60	<0.06	0.12-0.18	5.1-6.5	High	High	Moderate	0.32	
	60-78	<0.06	0.12-0.18	5.1-7.3	High	High	Moderate	0.32	
Gessner part	0-16	0.6-2.0	0.10-0.15	6.1-7.8	Low	High	Low	0.43	5
	16-80	0.6-2.0	0.15-0.20	6.6-8.4	Low	High	Low	0.43	
[1]As:									
Aris part	0-21	0.6-2.0	0.11-0.15	5.6-7.3	Low	High	Moderate	0.37	5
	21-28	0.2-0.6	0.12-0.17	5.1-6.5	Moderate	High	Moderate	0.32	
	28-60	<0.06	0.12-0.18	5.1-6.5	High	High	Moderate	0.32	
	60-78	<0.06	0.12-0.18	5.1-7.3	High	High	Moderate	0.32	
Urban land part.									
Atasco:									
AtB	0-16	0.6-2.0	0.14-0.18	5.1-6.5	Low	Low	Low	0.37	5
	16-19	0.2-0.6	0.15-0.19	4.5-6.0	Low	Moderate	Moderate	0.37	
	19-60	<0.06	0.15-0.22	4.5-6.0	Moderate	High	Moderate	0.32	
Beaumont:									
Ba	0-21	0.06-0.2	0.15-0.20	4.5-6.0	High	High	Moderate	0.32	5
	21-59	<0.06	0.15-0.20	4.5-5.5	High	High	Moderate	0.32	
	59-73	<0.06	0.15-0.20	5.1-7.8	High	High	Moderate	0.32	
[1]Bc:									
Beaumont part	0-21	0.06-0.2	0.15-0.20	4.5-6.0	High	High	Moderate	0.32	5
	21-59	<0.06	0.15-0.20	4.5-5.5	High	High	Moderate	0.32	
	59-73	<0.06	0.15-0.20	5.1-7.8	High	High	Moderate	0.32	
Urban land part.									

See footnotes at end of table.

TABLE 17.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors	
						Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH					
Ijam:									
[1]Is----------	0-8	<0.06	0.10-0.12	6.6-9.0	High------	High----------	High----------	0.32	5
	8-60	<0.06	0.10-0.12	6.6-9.0	High------	High----------	High----------	0.32	
Kaman:									
Ka----------	0-70	<0.06	0.15-0.20	5.6-7.8	High------	High----------	Moderate-------	0.32	5
Katy:									
Kf----------	0-28	0.6-2.0	0.15-0.20	5.6-6.5	Low--------	Moderate------	Moderate-------	0.37	5
	28-65	<0.2	0.12-0.18	5.1-7.3	Moderate	High----------	Moderate-------	0.32	
Kenney:									
Kn----------	0-56	6.0-20	0.06-0.10	5.1-6.5	Low--------	Low-----------	Moderate-------	0.17	5
	56-80	2.0-6.0	0.11-0.15	5.1-6.5	Low--------	Low-----------	Moderate-------	0.24	
[1]Ku:									
Kenney part------	0-56	6.0-20	0.06-0.10	5.1-6.5	Low--------	Low-----------	Moderate-------	0.17	5
	56-80	2.0-6.0	0.11-0.15	5.1-6.5	Low--------	Low-----------	Moderate-------	0.24	
Urban land part.									
Lake Charles:									
LcA, LcB----------	0-22	0.06-0.2	0.15-0.20	6.1-7.8	High------	High----------	Low------------	0.32	5
	22-74	<0.06	0.15-0.20	6.6-8.4	High------	High----------	Low------------	0.32	
[1]Lu:									
Lake Charles part	0-22	0.06-0.2	0.15-0.20	6.1-7.8	High------	High----------	Low------------	0.32	5
	22-74	<0.06	0.15-0.20	6.6-8.4	High------	High----------	Low------------	0.32	
Urban land part.									
Midland:									
Md----------	0-7	0.06-0.2	0.20-0.22	5.1-6.5	Moderate	High----------	Moderate-------	0.37	5
	7-72	<0.06	0.18-0.20	5.6-8.4	High------	High----------	Low------------	0.32	
[1]Mu:									
Midland part-----	0-7	0.06-0.2	0.20-0.22	5.1-6.5	Moderate	High----------	Moderate-------	0.37	5
	7-72	<0.06	0.18-0.20	5.6-8.4	High------	High----------	Low------------	0.32	
Urban land part.									
Nahatche:									
Na----------	0-18	0.6-2.0	0.10-0.15	5.1-7.8	Moderate	Moderate------	Moderate-------	0.28	5
	18-30	0.6-2.0	0.10-0.15	5.1-7.8	Moderate	High----------	Moderate-------	0.28	
	30-60	0.6-2.0	0.10-0.15	5.1-7.8	Moderate	High----------	Moderate-------	0.28	
Ozan:									
Oa----------	0-18	0.6-2.0	0.14-0.17	4.5-6.0	Low--------	High----------	High----------	0.37	5
	18-65	0.06-0.2	0.15-0.18	4.5-6.0	Low--------	High----------	High----------	0.37	
[1]On:									
Ozan part--------	0-18	0.6-2.0	0.14-0.17	4.5-6.0	Low--------	High----------	High----------	0.37	5
	18-65	0.06-0.2	0.15-0.18	4.5-6.0	Low--------	High----------	High----------	0.37	
Urban land part.									
Segno:									
SeA, SeB----------	0-13	0.6-2.0	0.10-0.15	5.1-6.5	Low--------	Low-----------	Moderate-------	0.24	5
	13-42	0.2-0.6	0.10-0.15	4.5-6.0	Low--------	Moderate------	High----------	0.32	
	42-75	0.2-0.6	0.08-0.12	4.5-6.0	Low--------	Moderate------	High----------	0.24	
Urban land:									
Ur.									
Vamont:									
VaA, VaB----------	0-8	0.06-0.2	0.15-0.2	4.5-7.3	High------	High----------	Moderate-------	0.32	5
	8-70	<0.06	0.15-0.2	5.1-7.3	High------	High----------	Moderate-------	0.32	
	70-80	<0.06	0.15-0.2	5.6-7.8	High------	High----------	Moderate-------	0.32	

See footnotes at end of table.



Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
TEXAS AGRICULTURAL EXPERIMENT STATION
AND
HARRIS COUNTY FLOOD CONTROL DISTRICT

N

GENERAL SOIL MAP
HARRIS COUNTY, TEXAS

Scale 1:316,800
1 0 1 2 3 4 5 Miles

SOIL ASSOCIATIONS

NEARLY LEVEL, CLAYEY AND LOAMY, PRAIRIE SOILS

1 Lake Charles-Bernard association: Somewhat poorly drained, very slowly permeable, clayey and loamy soils

2 Midland-Beaumont association: Poorly drained, very slowly permeable, loamy and clayey soils

NEARLY LEVEL, LOAMY, PRAIRIE SOILS

3 Clodine-Addicks-Gessner association: Poorly drained, moderately permeable soils

4 Wockley-Gessner association: Somewhat poorly drained and poorly drained, moderately slowly permeable and moderately permeable soils

5 Katy-Aris association: Somewhat poorly drained and poorly drained, very slowly permeable soils

NEARLY LEVEL TO GENTLY SLOPING, LOAMY, FORESTED SOILS

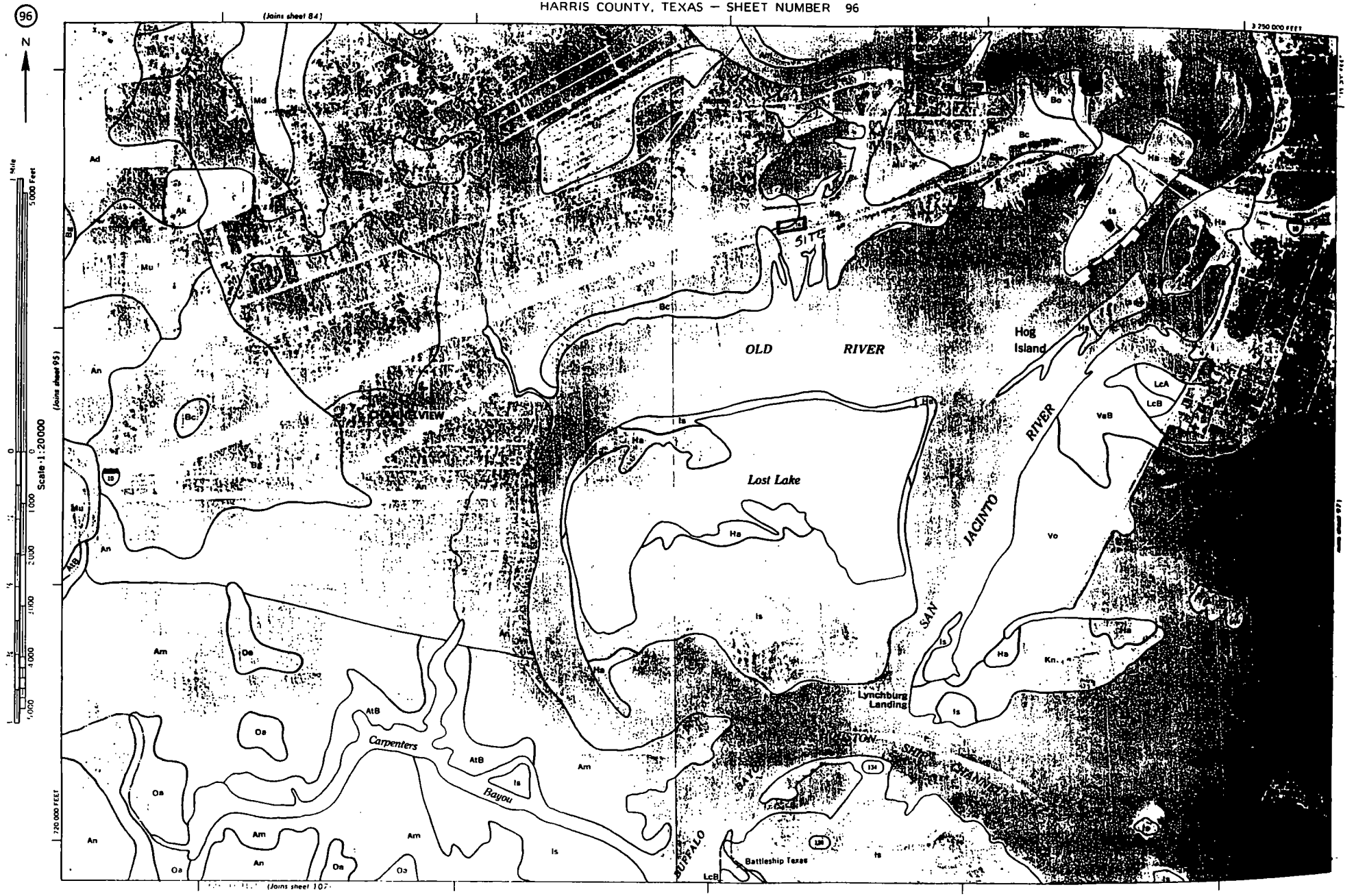
Aldine-Ozan association: Somewhat poorly drained and poorly drained, very slowly permeable and slowly permeable soils

Segno-Hockley association: Moderately well drained, moderately slowly permeable soils

NEARLY LEVEL, FORESTED, BOTTOM LAND SOILS

Nahatche-Voss-Kaman association: Moderately well drained to poorly drained, rapidly permeable to very slowly permeable, loamy, sandy, and clayey soils

Compiled 1975


(96)
N
(Joins sheet 84)
(Joins sheet 95)
(Joins sheet 107)
(98)
N
SITE
OLD RIVER
Hog Island
Lost Lake
SAN JACINTO RIVER
Lynchburg Landing
Carpenters Bayou
BUFFALO BAYOU
SHIP CHANNEL
Battleship Texas
Scale 1:20000
5000 Feet
1 Mile
720,000 FEET
3 750 000 FEET

ICF

Ref. 7

1509 Main Street, Suite 900
Dallas, Texas
75201-4809

214/744-1641

ICF TECHNOLOGY INCORPORATED

TO: Ed Sierra, Region VI RPO

THRU: K.H. Malone, Jr., FITOM

THRU: Tim A. Hall, AFITOM

FROM: Victor Cason, FIT Chemist

DATE: February 28, 1989

SUBJECT: Sampling Inspection for Goodson & Son Trucking, Channelview, Texas. TDD# F-6-8809-29, CERCLIS# TXD9801052475, PAN FTX0557SBF

1. INTRODUCTION

During the week of November 14 - 17, 1988 a five member FIT team consisting of Victor Cason, Steve Cowan, Joe Phillips, Derrick Johnson and Terry Pierce, performed a sampling inspection at the Goodson & Son Trucking site in Channelview, Texas. Eight soil samples and eight water samples were collected at the site. All sixteen samples were analyzed for full RAS TCL at Environmental Industrial Research (EIRA) and for full RAS TAL at Century Laboratories.

2. SITE HISTORY

The site originally existed as a low lying area between the I-10 East Freeway and the 17300 block of Market Street (Figure 1). During the summer of 1979, the owner, Kyle Goodson, filled the area with cement flue dust purchased from Ideal Basic Industries, Lone Star Industries, and Gulf Coast Portland Cement. Complaints regarding airborne dust were received by the Harris County Pollution Control Department (HCPCD) and they performed a site inspection on April 29, 1981. High pH water was noted on-site and in the runoff from the fill area.

FIT performed a site inspection on August 3, 1987 and discovered high pH water in both the north and south ditches. Analysis of a soil sample collected in the north ditch revealed the presence of several polynuclear aromatic compounds and high levels of calcium, magnesium, potassium and sodium (Exhibit 1).

3. SITE OPERATIONS

On November 15, 1988, four soil samples and three water samples were collected and shipped to CLP labs for analysis. At three locations along the south

ditch, both a water and a soil sample were collected (Figure 2). Each soil sample was collected with a dedicated stainless steel trowel. All water samples were collected with dedicated stainless steel beakers and stainless steel buckets. The water samples ranged in pH from 7.1 to 7.3. A sample of the fill material was collected from the center of the fill area at a depth of 6 inches to 1 foot. The material was excavated with the aid of a pick and stainless steel trowel.

The original sampling plan requested two samples of fill material from Station 01. However, Station 01 was also designated as the soil QA/QC sample. Therefore, a duplicate sample of the fill material would have been redundant. Instead a duplicate soil sample was collected at a different location. All of the samples were decontaminated using a distilled water rinse followed by a deionized water rinse. A trip blank was prepared and kept with the sample bottles.

On November 16, 1988, four soil samples and five water samples were shipped to the CLP labs for analysis. Station 10 was designated as the north ditch background water sample. However, no water was present in the north ditch upgradient of the storm sewer outfall, so a sample was collected from a manhole adjacent to the access road for I-10. The manhole received water from a conduit upgradient of the site and fed into the storm sewer in the north ditch. A sediment sample could not be collected from the manhole, therefore, a soil sample was collected in the north ditch upgradient of the storm sewer outfall. Station 06 was the water QA/QC sample. Sufficient volume for the sample was collected in two stainless steel buckets. The water was poured from one bucket to the other to ensure a homogenous sample. Duplicate water and soil samples were collected from the east end of the north ditch. Again all samples were decontaminated according to the procedure previously mentioned. The trip blank was one of the samples shipped on this day. The soil samples were collected with dedicated stainless steel trowels. All water samples were collected with dedicated stainless steel beakers and stainless steel buckets. The pH range of the water samples was 6.9 to 11.7. Table 1 shows the conductivity, temperature and pH measurements of the water samples.

4. RESULTS

A. ORGANIC ANALYSIS

Organic analysis of the fill material, Station 01, revealed the presence of bis (2-ethylhexyl)phthalate, 4,4'-DDT, 4,4'-DDE and 4,4'-DDD (Exhibit 2). From the north ditch, Station 02 contained 4,4'-DDT in a concentration of 94 ppb. Bis (2-ethylhexyl)phthalate, 4,4'-DDT, 4,4'-DDE and 4,4'-DDD were also present in Station 04. Station numbers 12 and 15, collected from the north ditch near the cove, contained bis(2-ethylhexyl)phthalate, phenanthrene and many semi-volatile tentatively identified compounds (TICs).

In the south ditch near the site entrance, Station 03 contained bis (2-ethylhexyl) phthalate, di-n-butylphthalate, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD and several TICs. However, the soil sample near the southern edge of the site

contained only three TICs. The background sample for the south ditch contained very few organic constituents.

The water sample in the north ditch adjacent to the storm sewer contained ethylbenzene, methylene chloride, acetone, styrene, xylene, pentachlorophenol, phenol, fluoranthene, naphthalene, phenanthrene, benzoic acid, 4-methylphenol, 2-methylnaphthalene and a large number of semi-volatile TICs. Several TICs were present in the water samples taken in the north ditch near the cove.

Several semi-volatile TICs were found in the water samples collected in the south ditch adjacent to the site, Stations 08 and 16. The background water sample for the south ditch contained acetone, carbon disulfide and a few semi-volatile TICs.

A broad, unresolved peak was noticed in the chromatographs for sample stations 03, 05, 06, 10, 12, 13, and 15. This suggests the samples contained an oily matrix.

B. INORGANIC ANALYSIS

The sample of fill material from Station 01 contained high concentrations of calcium, potassium and sodium (Exhibit 3). All soil samples collected from the north ditch contained high concentrations of calcium and sodium. Aluminum, and potassium were reported in elevated concentrations in soil samples 02 and 04 (Exhibit 2).

Soil samples from the south ditch contained high concentrations of aluminum, calcium, iron, potassium and sodium as compared to the background south ditch sample.

Elevated levels of barium, calcium, potassium and sodium were found in the water samples from the north ditch as compared to the north ditch background sample, Station 10. Aluminum, arsenic, barium, iron and manganese were also present in elevated levels in Station 06.

Potassium and sodium in high concentrations were found in the water samples collected from the south ditch as compared to Station 11, the south ditch background water. Station 09 also contained elevated levels of barium and magnesium.

5. DISCUSSION & CONCLUSION

In the organic fraction, the on-site sample contained bis (2-ethylhexyl) phthalate, 4,4'-DDT and its degradation products. Three soil samples collected in the drainage pathways also contained one or more of the pesticide compounds. The presence of the degradation products in three of the samples indicates that a period of time had passed since the introduction of the DDT to the site and surrounding area. However, the sample in the north ditch adjacent to the storm sewer, Station 02, exhibited no degradation products and DDT was present in a higher concentration than the other samples. Since the

use of DDT was banned in the early 1970s, the origin of the pesticide at the Goodson & Son Trucking site and surrounding area is not known. DDT was not detected in any of the water samples, including the sample station adjacent to the storm sewer.

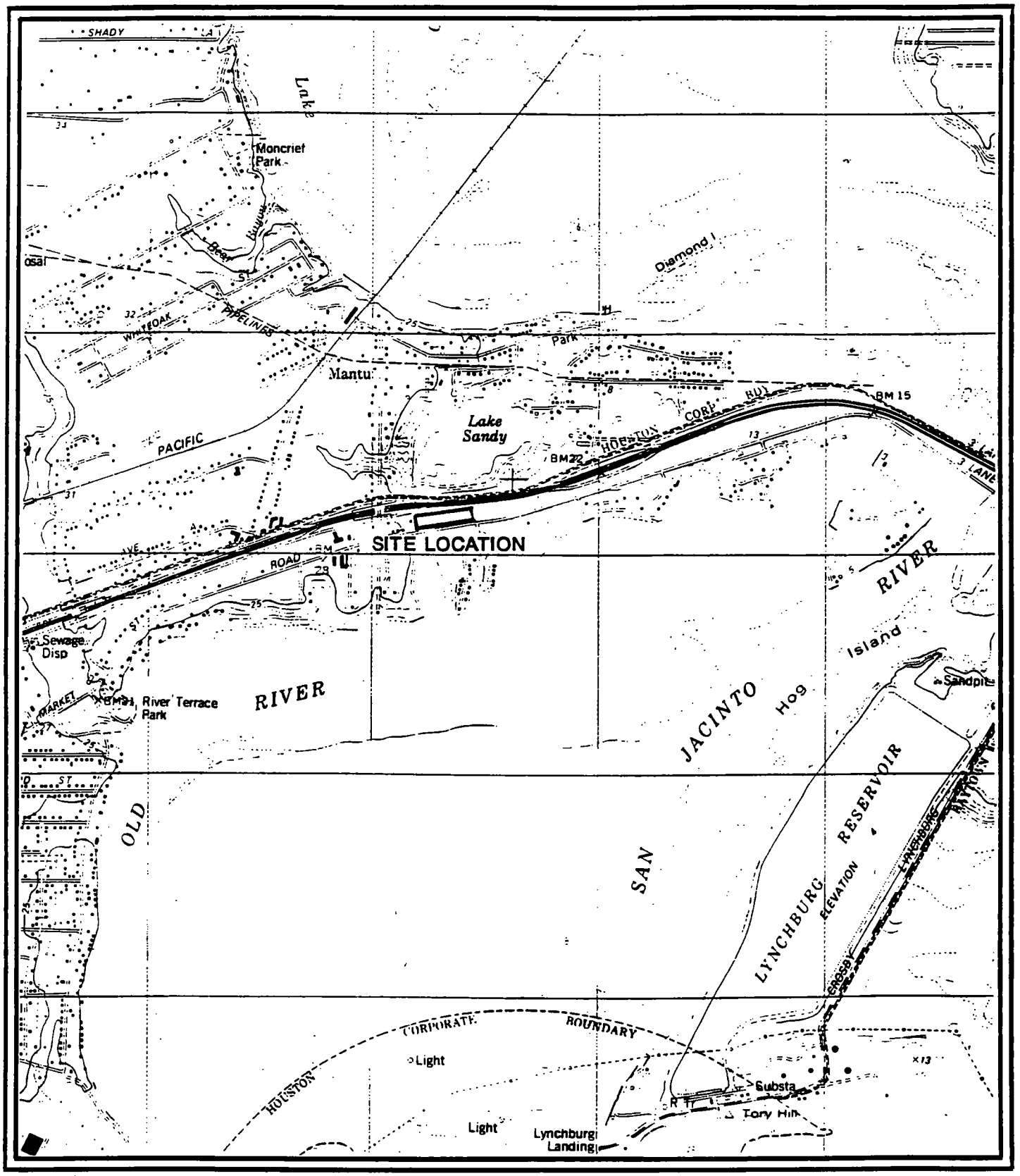
The presence of broad, unresolved chromatographic peaks in several samples indicates the presence of an oily matrix for those samples. Upgradient of the site, several truck repair stations and a truck wash are present and are the most probable cause of the oil in the samples. Station 06 contained several aromatic and polyaromatic compounds typical of oil matrices.

The inorganic analysis of the samples revealed high levels of calcium, potassium and sodium. High calcium concentrations were expected since the fill material is concrete flue dust. The concrete dust is composed of calcium carbonate to a large extent. The presence of some potassium and sodium in the same matrix is not uncommon. The high pH in the north ditch can be attributed somewhat to the calcium carbonate which is soluble in water. However, a pH greater than 11.5 is unusual. The presence of high concentrations of potassium and sodium could indicate that metal hydroxides may also be present in the fill material. A very small quantity of calcium, sodium, or potassium hydroxides can significantly raise the pH in a body of water.

Without further investigation, only the calcium, potassium and sodium contaminants can be attributed to the site. The source of DDT in the north ditch near the sewer as well as on-site is not known at this time. The oil constituents probably entered the north and south ditches from upgradient sources.

Figure 1

ICF



N

0 2000 FT

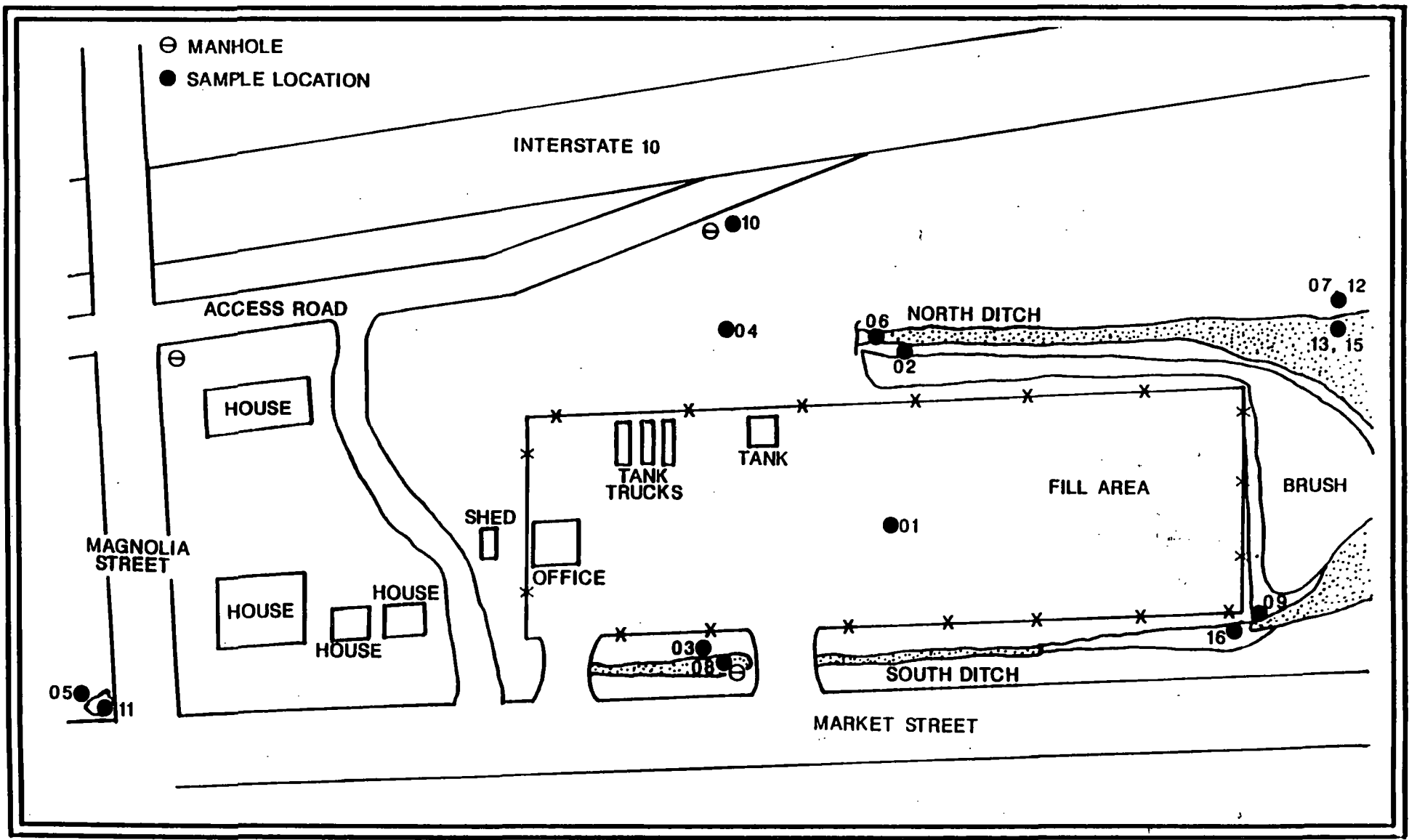
SCALE 1 : 24000

Site Location Map
GOODSON & SON TRUCKING
CHANNELVIEW, TX
TDD NO. F-6-8809-29
CERCLIS NO. TXD981052475

QUADRANGLE LOCATION
HIGHLANDS, TX

Figure 2

ICF



N

NOT TO SCALE

Site Sketch/Sample Location
GOODSON & SON TRUCKING
CHANNELVIEW, TX
TDD NO. F-6-8809-29
CERCLIS NO. TXD981052475

Exhibit 1

Inorganic and Organic Analyses
of Soil Sample Collected on
August 3, 1987 at Goodson & Son Trucking

INORGANIC ANALYSIS SUMMARY FOR SOIL

SITE NAME AND NUMBER: GOODSON & SON TRUCKING (LF)
CASE NUMBER: 7530 PAGE 1 OF 1
CONCENTRATIONS IN PARTS PER MILLION (PPM)

TRAFFIC REPORT NUMBER AND STATION LOCATION.

		MFE733				
		1				
		1 SOIL SAMPLE IN THE NORTH DITCH NEAR CONDUIT.				
	MATRIX	SOIL				
	% MOISTURE	22	0	0	0	0
	CAS NO.					
ALUMINUM	7429-90-5	2860	0	0	0	0
ANTIMONY	7440-36-0	16U	0	0	0	0
ARSENIC	7440-38-2	6.400U	0	0	0	0
BARIUM	7440-39-3	112	0	0	0	0
BERYLLIUM	7440-41-7	0.640U	0	0	0	0
CADMIUM	7440-43-9	2.600U	0	0	0	0
CALCIUM	7440-70-2	71100	0	0	0	0
CHROMIUM	7440-47-3	19	0	0	0	0
COBALT	7440-48-4	5.800U	0	0	0	0
COPPER	7440-50-8	12	0	0	0	0
IRON	7439-89-6	7820	0	0	0	0
LEAD	7439-92-1	44J	0	0	0	0
MAGNESIUM	7439-95-4	1550	0	0	0	0
MANGANESE	7439-96-5	131	0	0	0	0
MERCURY	7439-97-6	0.130U	0	0	0	0
NICKEL	7440-02-0	7.800	0	0	0	0
POTASSIUM	7440-09-7	4320	0	0	0	0
SELENIUM	7782-49-2	3.200U	0	0	0	0
SILVER	7440-22-4	2.600U	0	0	0	0
SODIUM	7440-23-5	1350	0	0	0	0
THALLIUM	7440-28-0	6.400U	0	0	0	0
TIN	7440-31-5	14U	0	0	0	0
VANADIUM	7440-62-2	12	0	0	0	0
ZINC	7440-66-6	58	0	0	0	0
CYANIDE		0.640U	0	0	0	0
HARDNESS		0	0	0	0	0
ALKALINITY		0	0	0	0	0

R - DATA IS UNUSABLE DUE TO QA/QC OUT OF CONTROL LIMITS.
J - REPORTED CONCENTRATIONS ARE ESTIMATES DUE TO QA/QC OUT OF CONTROL LIMITS.
B - CONCENTRATION IN SAMPLE ATTRIBUTABLE TO BLANK CONTAMINATION.
U - NOT DETECTED; VALUE REPORTED IS THE DETECTION LIMIT.

DATA EVALUATION

SITE NAME Goodson & Son Trucking CASE NO. 7830 PAGE 1 of 1

The case consists of one soil sample analyzed for metals and cyanide. The following qualifications have been placed on the data after Review of the QA/QC data.

1) The Reported Results and detection limits for lead and silver are considered estimates. (J) due to low matrix spike Recoveries. The actual values for TDP may be as great as 2.5 and 1.6 times the Reported values for lead and silver respectively.

2) The holding Times for mercury and cyanide were out of control limits. The Reported Results are considered estimates TDP A (J) and are biased low.

3) All other QA/QC criteria were within control limits.

ORGANIC ANALYSIS SUMMARY

ITE NAME: Goodson & Son Trucking (Landfill)
ASE NUMBER 7830 PAGE 1 OF 1
ONCENTRATIONS IN PARTS PER BILLION

ORGANIC TRAFFIC NUMBERS
AND SAMPLE STATION LOCATION DESCRIPTIONS

ff831				
soil sample taken in north ditch				
MATRIX soil				

COMPOUND	CAS#/SCAN	CLASS					
FLUORANTHENE	206-44-0	ABN/1	340j				
NAPHTHALENE	91-20-3	ABN/1	390j				
BIS(2-ETHYLHEXYL)PHTHALAT	117-81-7	ABN/1	740				
BENZO(A)ANTHRACENE	56-55-3	ABN/1	130j				
BENZO(A)PYRENE	50-32-8	ABN/1	120j				
BENZO(B)FLUORANTHENE	205-99-2	ABN/1	240j				
CHRYSENE	218-01-9	ABN/1	140j				
PHENANTHRENE	85-01-8	ABN/1	620				
DIBENZOFURAN	132-64-9	ABN/2	120j				
2-METHYLNAPHTHALENE	91-57-6	ABN/2	280j				
Not identified	210	ABN/3	110000J				
Benzene, ethenyl-	253	ABN/3	3000J				
ALKANE	722	ABN/3	2900J				
ALKANE	783	ABN/3	1500J				
ALKANE	801	ABN/3	5800J				
ALKANE	848	ABN/3	3000J				
ALKANE	875	ABN/3	7900J				
Not identified	912	ABN/3	3000J				
Naphthalene, trimethyl- +	920	ABN/3	1600J				
ALKANE	978	ABN/3	4000J				
ALKANE	1011	ABN/3	15000J				
ALKANE	1074	ABN/3	6100J				
ALKANE	1080	ABN/3	2700J				
ALKANE	1110	ABN/3	1400J				
ALKANE	1133	ABN/3	7800J				
ALKANE	1190	ABN/3	3800J				
ALKANE	1244	ABN/3	3200J				

1. PRIORITY POLLUTANT
2. SPECIFIED HAZARDOUS SUBSTANCE
3. TENTATIVELY IDENTIFIED

VOA - VOLATILE
ABN - ACID/BASE/NEUTRAL
PES - PESTICIDE

B - THE ANALYTE IS FOUND IN THE LAB BLANK
J - INDICATES AN ESTIMATED VALUE FOR TENTATIVELY IDENTIFIED COMPOUNDS OR COMPOUNDS FOUND BELOW CONTRACT DETECTION LIMIT
P - PRESENT IN SAMPLE, BUT NOT REPORTED BY LAB
C - CONFIRMED BY MASS SPECTRAL DATA

DATA EVALUATION

TE NAME Goodson & Son Trucking CASE NO. 7830 PAGE 1

The case consists of one soil sample analyzed for semi-volatile organics. The laboratory received insufficient sample to provide volatile ~~and pest~~ TOP organics and pesticide/PCB analysis. The following qualifications have been placed on the data after review of the associated QA/QC data.

1) The %D of the continuing calibration was out of limits for benzo(k) fluoranthene (30.5%) and benzo(b) fluoranthene (36.1%). Results should be considered as estimates (J).

2) One B/N spike recovery was out of limits for the MSD. Reported results should be considered as estimates (J).

3) All other QA/QC criteria were within control limits.

Exhibit 2

Organic Analysis Results

DATA QUALITY ASSURANCE REVIEW

SITE NAME GOODSON & SON TRUCKING Channelview, TX

SITE CODE TKD981052475

PAN ITX0557SBF

CASE NUMBER 10883

LABORATORY EIRA

SAMPLE NUMBERS

FJ-110	FJ-111	FJ-112	FJ-113
FJ-114	FJ-115	FJ-116	FJ-117
FJ-118	FJ-119	FJ-120	FJ-121
FJ-122	FJ-123	FJ-124	FJ-125

DA 2-7-89

REVIEWER Victor Cason, ICF Technology

DATA EVALUATION

SITE NAME: Goodson & Son Trucking

CASE NUMBER: 10883

SAMPLE NUMBERS: FJ110, FJ111, FJ112, FJ113, FJ114, FJ115, FJ116, FJ117, FJ118, FJ119, FJ120, FJ121, FJ122, FJ123, FJ124, FJ125

The data package consists of 8 water and 8 soil samples analyzed for VOAs, ABNs and Pesticides/PCBs using low concentration protocols. The following qualifications are placed on the data.

VOA FRACTION:

1. Sample FJ115 was analyzed at a 1 to 10 dilution. Samples FJ119 and FJ122 were analyzed at 1 to 2 dilutions. Dilutions result in higher sample detection limits.

2. Due to calibration criteria out of control limits, reported concentrations of 2-butanone in samples FJ111, FJ114 and FJ122 are considered estimates (J flag). All reported detection limits for 2-butanone in the remaining samples are considered unusable.

3. All reported detection limits for 2-hexanone are considered unusable due to unacceptable calibration criteria.

4. Calibration criteria for methylene chloride and acetone were out of control limits in the continuing calibrations for all samples. All reported concentrations and detection limits for methylene chloride and acetone are considered estimates (J flag).

5. Vinyl chloride was out of the CCC control limits in the soil continuing calibration on 11/18/88 at 0607 hours. A new initial calibration was not conducted and the samples were not reanalyzed, therefore the laboratory is in violation of their contract.

6. Calibration criteria out of control limits were noted in both VOA continuing calibrations, however none of these compounds were detected in the samples and the effect is that the reported detection limits for these compounds are considered estimates.

7. Methylene chloride and acetone were detected in the soil method blank. Sample concentrations of these analytes less than ten times their concentration in the method blank are flagged "B" on the data summary.

ABN FRACTION

1. Samples FJ114, FJ119, FJ122 FJ122MS and FJ122MSD were all analyzed at 1 to 2 dilutions. Sample FJ115 was analyzed at no and 1 to 2 dilutions. Dilutions have the effect of raising sample detection limits.

2. The reported concentration of benzoic acid in sample FJ115 is considered

an estimate due to calibration criteria out of control limits. Reported detection limits for benzoic acid in the remaining samples, except FJ110 are considered unusable due to unacceptable calibration criteria.

3. Calibration criteria out of control limits were noted for several other compounds in continuing calibrations, however these compounds were not detected in the associated samples and the effect is that detection limits for these compounds are considered estimates.

4. TIC compounds were detected in both of the water method blanks. Sample concentrations of these TICs less than 5 times their method blank concentration are flagged "B" of the summary sheets.

5. Recoveries of surrogates were out of control limits in the analysis of samples FJ121 and FJ118MSD, however the data is not significantly affected.

6. Recoveries of the matrix spike compounds were consistently low in the matrix spike duplicate analysis of water sample FJ118, with six of the eleven compounds having recoveries below control limits. The poor recovery of 4-nitrophenol may be due to low response factors noted in all of the continuing calibrations. The generally poor recoveries may be due to poor spiking techniques by the laboratory.

7. Samples FJ112, FJ114, FJ115, FJ116, FJ119, FJ120, FJ121, FJ122, and FJ124 each contained a broad, poorly resolved chromatographic peak. Chromatographic peaks of this type are generally associated with oily materials.

PESTICIDE/PCB FRACTION

1. Sample FJ118 was analyzed at a 1 to 3 dilution. Samples FJ111, FJ118MS and FJ118MSD were analyzed at 1 to 5 dilutions. Samples FJ115, FJ116, FJ117, FJ120, FJ124 and FJ125 were analyzed at 1 to 10 dilutions. Sample FJ119 was analyzed at a 1 to 1000 dilution. Dilutions have the effect of raising the sample detection limits.

2. Reported concentrations and detection limits for sample FJ112 are all off by a factor of 2 since the laboratory did not take into account that the sample size was 15 grams instead of 30 grams.

3. Reported detection limits in sample FJ118 are all off by a factor of 1.67 since the laboratory did not take into account that the sample size was 300ml instead of 500ml. This results in a surrogate recovery of approximately 27% which is within control limits.

4. The laboratory reported that surrogate was diluted out in samples FJ111, FJ119, FJ122 and FJ123. Sample FJ123 was not analyzed at a dilution, indicating the possibility that the sample was not spiked, as does the 0% recovery of the surrogate in the soil method blank.

5. Recovery of the surrogate was high in sample FJ110. No qualification are placed on the data at this time.

6. Recoveries of the matrix spike compounds were very inconsistent in the

water matrix spike and duplicate, however the recoveries were all within limits for the soil matrix spike and duplicate. The data is not qualified at this time.

Chemical Data Summary

SITE NAME AND CODE: GOODSON & SON TRUCKING
CASE NUMBER: 10883

CONCENTRATIONS IN PARTS PER BILLION (ug/L WATER, ug/kg SOIL)
Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

Organic Traffic Number			FJ-110		FJ-111		FJ-112		FJ-113		FJ-114		FJ-115		FJ-116		FJ-117		FJ-118		FJ-119	
Matrix			SOIL		SOIL		SOIL		SOIL		SOIL		WATER		WATER		WATER		WATER		SOIL	
Percent Moisture			34		26		33		25		14										22	
Location And/Or Sample Description			STATION #01 FILL MATERIAL FROM CENTER OF SITE		STATION #02 NORTH DITCH NEAR UNDER-GROUND STORM CONDUIT		STATION #03 SOUTH DITCH NEAR SITE ENTRANCE		STATION #04 NORTH DITCH ABOVE STORM SEWER		STATION #05 SOUTH DITCH BACKGROUND WEST OF MAGNOLIA STREET		STATION #06 NORTH DITCH NEAR STORM CONDUIT		STATION #07 NORTH DITCH NEAR COVE		STATION #08 SOUTH DITCH NEAR SITE ENTRANCE		STATION #09 SOUTH DITCH NEAR COVE		STATION #12 NORTH DITCH NEAR COVE	
Compound Name	CAS/SCAN	CLASS																				
ETHYLBENZENE	100-41-4	VOA/1											77									
METHYLENE CHLORIDE	75-09-2	VOA/1	21	BJ	13	BJ	61	BJ	20	BJ	18	BJ	1800	J							24	BJ
TOLUENE	108-88-3	VOA/1																				
ACETONE	67-64-1	VOA/1	14	BJ							13	BJ	150	BJ							110	J
2-BUTANONE	78-93-3	VOA/1			9	J					14	J										
CARBON DISULFIDE	75-15-0	VOA/1													3	J						
STYRENE	100-42-5	VOA/1											1600								15	
TOTAL XYLENES	1330-20-7	VOA/1											120								14	
PENTACHLOROPHENOL	87-86-5	ABN/1											22	J								
PHENOL	108-95-2	ABN/1											52									
FLUORANTHENE	206-44-0	ABN/1											8	J								
NAPHTHALENE	91-20-3	ABN/1											25									
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	ABN/1	160	J			250	J	190	J											450	J
DI-N-BUTYL PHTHALATE	84-74-2	ABN/1					830															
PHENANTHRENE	85-01-8	ABN/1											22								590	J
BENZOIC ACID	65-85-0	ABN/1											430	J								
4-METHYLPHENOL	106-44-5	ABN/1											19									
2-METHYLNAPHTHALENE	91-57-6	ABN/1											58									
4,4'-DDT	50-29-3	PES/1	33		94		28		21													
4,4'-DDE	72-55-9	PES/1	15				9.8	J	20													
4,4'-DDD	72-54-8	PES/1	6.9	J			2.8	J														
UNKNOWN	2169	VOA/2																			20	J
HYDROCARBON	2587	VOA/2																			90	J
HYDROCARBON	2653	VOA/2																			300	J
UNKNOWN	2777	VOA/2																			10	J
UNKNOWN	2970	VOA/2																			20	J
UNKNOWN	3257	VOA/2																			50	J
UNKNOWN	3326	VOA/2																			60	J
UNKNOWN	648	ABN/2											400	J								
UNKNOWN	711	ABN/2													30	BJ						
UNKNOWN	729	ABN/2					500	J														
UNKNOWN	732	ABN/2																				
UNKNOWN	735	ABN/2																	20	BJ		
UNKNOWN	751	ABN/2													70	BJ			10	BJ		
UNKNOWN	770	ABN/2																				
UNKNOWN	773	ABN/2																				
UNKNOWN	774	ABN/2													20	BJ						
UNKNOWN	799	ABN/2																	8	J		
UNKNOWN	880	ABN/2															10	J				
UNKNOWN	904	ABN/2															40	J				

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB
1 - TARGET COMPOUND LIST COMPOUND (TCL) 2 - TENTATIVELY IDENTIFIED COMPOUND (TIC)
J - ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CRQL OR TCL WITH RA/RC OUT OF CONTROL LIMITS) U - UNDETECTED, DETECTION LIMIT

Chemical Data Summary

ITE NAME AND CODE: GOODSON & SON TRUCKING
ASE NUMBER: 10883

ONCENTRATIONS IN PARTS PER BILLION (ug/L WATER, ug/kg SOIL)
:epiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

Organic Traffic Number			FJ-110	FJ-111	FJ-112	FJ-113	FJ-114	FJ-115	FJ-116	FJ-117	FJ-118	FJ-119
Matrix			SOIL	SOIL	SOIL	SOIL	SOIL	WATER	WATER	WATER	WATER	SOIL
Percent Moisture			34	26	33	25	14					22
Location			STATION #01	STATION #02	STATION #03	STATION #04	STATION #05	STATION #06	STATION #07	STATION #08	STATION #09	STATION #12
And/Or			FILL MATERIAL	NORTH DITCH	SOUTH DITCH	NORTH DITCH	SOUTH DITCH	NORTH DITCH	NORTH DITCH	SOUTH DITCH	SOUTH DITCH	NORTH DITCH
Sample			FROM CENTER	NEAR UNDER-	NEAR SITE	ABOVE STORM	BACKGROUND	NEAR STORM	NEAR COVE	NEAR SITE	NEAR COVE	NEAR COVE
Description			OF SITE	GROUND STORM	ENTRANCE	SEWER	WEST OF	CONDUIT		ENTRANCE		
				CONDUIT			MAGNOLIA					
Compound Name	CAS/SCAN	CLASS					STREET					
UNKNOWN	1169	ABN/2						50 J				
UNKNOWN ALKANE	1177	ABN/2						60 J				
UNKNOWN	1196	ABN/2								20 J		
UNKNOWN	1197	ABN/2										
UNKNOWN	1306	ABN/2										3000 J
UNKNOWN	1325	ABN/2								10 J		
UNKNOWN	1329	ABN/2						40 J				
UNKNOWN	1426	ABN/2										
UNKNOWN	1427	ABN/2						200 J				4000 J
UNKNOWN	1442	ABN/2						60 J				
UNKNOWN	1460	ABN/2						70 J	10 J			
UNKNOWN	1464	ABN/2						40 J				2000 J
UNKNOWN	1483	ABN/2						80 J				
UNKNOWN	1485	ABN/2										2000 J
UNKNOWN	1498	ABN/2						60 J				2000 J
UNKNOWN	1540	ABN/2						40 J				
UNKNOWN	1544	ABN/2										
UNKNOWN	1585	ABN/2										
UNKNOWN	1602	ABN/2										
UNKNOWN	1603	ABN/2							10 J			
UNKNOWN	1621	ABN/2							20 J			
UNKNOWN	1633	ABN/2								10 J		
UNKNOWN	1638	ABN/2						30 J				
UNKNOWN	1639	ABN/2										2000 J
UNKNOWN	1640	ABN/2										
UNKNOWN	1646	ABN/2										6000 J
UNKNOWN	1646	ABN/2							10 J			
UNKNOWN	1650	ABN/2								10 J		
UNKNOWN	1657	ABN/2							20 J			
UNKNOWN	1661	ABN/2										
UNKNOWN	1674	ABN/2							10 BJ		10 BJ	
UNKNOWN	1682	ABN/2							10 J			
UNKNOWN	1698	ABN/2										
UNKNOWN	1747	ABN/2						70 J				6000 J
UNKNOWN	1750	ABN/2										
UNKNOWN	1752	ABN/2						40 J	20 J			5000 J
UNKNOWN	1755	ABN/2										
UNKNOWN	1758	ABN/2										
UNKNOWN	1764	ABN/2								8 J		
UNKNOWN	1769	ABN/2							10 J			900 J

OA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB
- TARGET COMPOUND LIST COMPOUND (TCL) 2 - TENTATIVELY IDENTIFIED COMPOUND (TIC)
- ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CRQL, OR TCL WITH QA/QC OUT OF CONTROL LIMITS) U - UNDETECTED, DETECTION LIMIT

SITE NAME AND CODE: GOODSON & SON TRUCKING
CASE NUMBER: 10883

CONCENTRATIONS IN PARTS PER BILLION (ug/L WATER, ug/kg SOIL)
Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

Organic Traffic Number			FJ-110	FJ-111	FJ-112	FJ-113	FJ-114	FJ-115	FJ-116	FJ-117	FJ-118	FJ-119
Matrix			SOIL	SOIL	SOIL	SOIL	SOIL	WATER	WATER	WATER	WATER	SOIL
Percent Moisture			34	26	33	25	14					22
Location And/Or Sample Description			STATION #01 FILL MATERIAL FROM CENTER OF SITE	STATION #02 NORTH DITCH NEAR UNDER-GROUND STORM CONDUIT	STATION #03 SOUTH DITCH NEAR SITE ENTRANCE	STATION #04 NORTH DITCH ABOVE STORM SEWER	STATION #05 SOUTH DITCH BACKGROUND WEST OF MAGNOLIA STREET	STATION #06 NORTH DITCH NEAR STORM CONDUIT	STATION #07 NORTH DITCH NEAR COVE	STATION #08 SOUTH DITCH NEAR SITE ENTRANCE	STATION #09 SOUTH DITCH NEAR COVE	STATION #12 NORTH DITCH NEAR COVE
Compound Name	CAS/SCAN	CLASS										
UNKNOWN	1771	ABN/2										
UNKNOWN	1772	ABN/2								10 J		
UNKNOWN	1774	ABN/2										
UNKNOWN	1778	ABN/2										
UNKNOWN	1780	ABN/2							8 J			
UNKNOWN	1783	ABN/2										
UNKNOWN	1788	ABN/2						20 J				
UNKNOWN	1790	ABN/2										2000 J
UNKNOWN	1792	ABN/2										
UNKNOWN	1796	ABN/2							8 J			
UNKNOWN	1801	ABN/2								10 J		
UNKNOWN	1801	ABN/2										
UNKNOWN	1809	ABN/2								8 J		
UNKNOWN	1818	ABN/2								8 J		
UNKNOWN	1851	ABN/2							10 J			900 J
UNKNOWN	1879	ABN/2										
UNKNOWN	1882	ABN/2										1000 J
UNKNOWN	1885	ABN/2										
UNKNOWN	1903	ABN/2										
UNKNOWN	1928	ABN/2						60 J	10 J			1000 J
UNKNOWN	1929	ABN/2										
UNKNOWN	1934	ABN/2										5000 J
UNKNOWN	1974	ABN/2							10 J			
UNKNOWN	2006	ABN/2										900 J
UNKNOWN	2019	ABN/2						50 J	20 J			5000 J
UNKNOWN	2072	ABN/2							10 J			
UNKNOWN	2083	ABN/2										
UNKNOWN	2102	ABN/2						30 J	10 J			3000 J
UNKNOWN	2182	ABN/2						60 J				2000 J
UNKNOWN	2257	ABN/2						30 J				1000 J
UNKNOWN ALKANE	2534	ABN/2			200 J							
UNKNOWN	2584	ABN/2	500 J									
UNKNOWN ALKANE	2597	ABN/2			300 J							
UNKNOWN	2622	ABN/2			300 J							
UNKNOWN ALKANE	2661	ABN/2			400 J							
UNKNOWN	2676	ABN/2			200 J							
UNKNOWN	2775	ABN/2				500 J	1000 J					
UNKNOWN	2803	ABN/2					300 J					
UNKNOWN ALKANE	2815	ABN/2			700 J							
UNKNOWN	2858	ABN/2					300 J					

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB
1 - TARGET COMPOUND LIST COMPOUND (TCL) 2 - TENTATIVELY IDENTIFIED COMPOUND (TIC)
J - ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CRQL, OR TCL WITH QA/QC OUT OF CONTROL LIMITS) U - UNDETECTED, DETECTION LIMIT
R - DATA FOR ANALYTE IS UNUSABLE B - ANALYTE DETECTED AT COMPARABLE CONCENTRATION IN ASSOCIATED BLANK

Chemical Data Summary

SITE NAME AND CODE: GOODSON & SON TRUCKING
CASE NUMBER: 10883

CONCENTRATIONS IN PARTS PER BILLION (ug/L WATER, ug/kg SOIL)
Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

Organic Traffic Number			FJ-110		FJ-111		FJ-112		FJ-113		FJ-114		FJ-115		FJ-116		FJ-117		FJ-118		FJ-119	
Matrix			SOIL		SOIL		SOIL		SOIL		SOIL		WATER		WATER		WATER		WATER		SOIL	
Percent Moisture			34		26		33		25		14										22	
Location And/Or Sample Description			STATION #01 FILL MATERIAL FROM CENTER OF SITE		STATION #02 NORTH DITCH NEAR UNDER-GROUND STORM CONDUIT		STATION #03 SOUTH DITCH NEAR SITE ENTRANCE		STATION #04 NORTH DITCH ABOVE STORM SEWER		STATION #05 SOUTH DITCH BACKGROUND WEST OF MAGNOLIA STREET		STATION #06 NORTH DITCH NEAR STORM CONDUIT		STATION #07 NORTH DITCH NEAR COVE		STATION #08 SOUTH DITCH NEAR SITE ENTRANCE		STATION #09 SOUTH DITCH NEAR COVE		STATION #12 NORTH DITCH NEAR COVE	
Compound Name	CAS/SCAN	CLASS																				
UNKNOWN	2911	ABN/2					200	J														
UNKNOWN	3006	ABN/2					5000	J														
UNKNOWN	3018	ABN/2					2000	J														
UNKNOWN	3110	ABN/2					1000	J														
UNKNOWN	3111	ABN/2									800	J										
UNKNOWN	3133	ABN/2					300	J														
UNKNOWN	3149	ABN/2					700	J														
UNKNOWN	3173	ABN/2					800	J														
UNKNOWN	3240	ABN/2					400	J														
UNKNOWN	3244	ABN/2					200	J														
UNKNOWN	3287	ABN/2					700	J														
UNKNOWN	3319	ABN/2									300	J										
UNKNOWN	3374	ABN/2					4000	J														
UNKNOWN	3429	ABN/2					2000	J														
UNKNOWN	3471	ABN/2					1000	J														

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB
1 - TARGET COMPOUND LIST COMPOUND (TCL) 2 - TENTATIVELY IDENTIFIED COMPOUND (TIC)

Chemical Data Summary

SITE NAME AND CODE: GOODSON & SON TRUCKING
CASE NUMBER: 10883

CONCENTRATIONS IN PARTS PER BILLION (ug/L WATER, ug/kg SOIL)
Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

Compound Name	CAS/SCAN	CLASS	Organic Traffic Number: FJ-120		FJ-121		FJ-122		FJ-123		FJ-124		FJ-125	
			Matrix: WATER		WATER		SOIL		SOIL		WATER		WATER	
			Percent Moisture:				22		17					
			Location And/Or Sample Description: STATION #13 NORTH DITCH NEAR COVE		STATION #14 TRIP BLANK		STATION #15 NORTH DITCH NEAR COVE DUPLICATE		STATION #16 SOUTH DITCH NEAR COVE		STATION #10 MANHOLE NEAR ACCESS ROAD NORTH OF SITE		STATION #11 SOUTH DITCH BACKGROUND WEST OF MAGNOLIA STREET	
ETHYLBENZENE	100-41-4	VOA/1												
METHYLENE CHLORIDE	75-09-2	VOA/1							7	B				
TOLUENE	108-88-3	VOA/1			5	J								
ACETONE	67-64-1	VOA/1	11	J										
2-BUTANONE	78-93-3	VOA/1					21	J					54	J
CARBON DISULFIDE	75-15-0	VOA/1	3	J	3	J							3	J
STYRENE	100-42-5	VOA/1												
TOTAL XYLENES	1330-20-7	VOA/1												
PENTACHLOROPHENOL	87-86-5	ABN/1												
PHENOL	108-95-2	ABN/1												
FLUORANTHENE	206-44-0	ABN/1												
NAPHTHALENE	91-20-3	ABN/1												
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	ABN/1	13				280	J						
DI-N-BUTYL PHTHALATE	84-74-2	ABN/1												
PHENANTHRENE	85-01-8	ABN/1					690	J						
BENZOIC ACID	65-85-0	ABN/1												
4-METHYLPHENOL	106-44-5	ABN/1												
2-METHYLNAPHTHALENE	91-57-6	ABN/1												
4,4'-DDT	50-29-3	PES/1			.067	J								
4,4'-DDE	72-55-9	PES/1												
4,4'-DDD	72-54-8	PES/1												
UNKNOWN	2169	VOA/2												
HYDROCARBON	2587	VOA/2												
HYDROCARBON	2653	VOA/2												
UNKNOWN	2777	VOA/2												
UNKNOWN	2970	VOA/2												
UNKNOWN	3257	VOA/2												
UNKNOWN	3326	VOA/2												
UNKNOWN	648	ABN/2												
UNKNOWN	711	ABN/2	20	BJ	20	BJ								
UNKNOWN	729	ABN/2												
UNKNOWN	732	ABN/2			10	J								
UNKNOWN	735	ABN/2												
UNKNOWN	751	ABN/2	90	BJ	10	BJ					50	BJ	10	BJ
UNKNOWN	770	ABN/2			8	J								
UNKNOWN	773	ABN/2			20	BJ								
UNKNOWN	774	ABN/2												
UNKNOWN	799	ABN/2												
UNKNOWN	880	ABN/2												
UNKNOWN	904	ABN/2												

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB
1 - TARGET COMPOUND LIST COMPOUND (TCL) 2 - TENTATIVELY IDENTIFIED COMPOUND (TIC)
J - ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CRQL, OR TCL WITH QA/QC OUT OF CONTROL LIMITS) U - UNDETECTED, DETECTION LIMIT

Chemical Data Summary

SITE NAME AND CODE: GOODSON & SON TRUCKING
CASE NUMBER: 10883

CONCENTRATIONS IN PARTS PER BILLION (ug/L WATER, ug/kg SOIL)
Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

Organic Traffic Number			FJ-120		FJ-121		FJ-122		FJ-123		FJ-124		FJ-125	
Matrix			WATER		WATER		SOIL		SOIL		WATER		WATER	
Percent Moisture							22		17					
Location And/Or Sample Description			STATION #13 NORTH DITCH NEAR COVE		STATION #14 TRIP BLANK		STATION #15 NORTH DITCH NEAR COVE DUPLICATE		STATION #16 SOUTH DITCH NEAR COVE		STATION #10 MANHOLE NEAR ACCESS ROAD NORTH OF SITE		STATION #11 SOUTH DITCH BACKGROUND WEST OF MAGNOLIA STREET	
Compound Name	CAS/SCAN	CLASS												
UNKNOWN	1169	ABN/2												
UNKNOWN ALKANE	1177	ABN/2												
UNKNOWN	1196	ABN/2												
UNKNOWN	1197	ABN/2											8	J
UNKNOWN	1306	ABN/2					4000	J						
UNKNOWN	1325	ABN/2												
UNKNOWN	1329	ABN/2												
UNKNOWN	1426	ABN/2	10	J										
UNKNOWN	1427	ABN/2					5000	J						
UNKNOWN	1442	ABN/2	10	J			2000	J						
UNKNOWN	1460	ABN/2												
UNKNOWN	1464	ABN/2												
UNKNOWN	1483	ABN/2	20	J										
UNKNOWN	1485	ABN/2					3000	J						
UNKNOWN	1498	ABN/2					3000	J						
UNKNOWN	1540	ABN/2												
UNKNOWN	1544	ABN/2					2000	J						
UNKNOWN	1585	ABN/2	10	J										
UNKNOWN	1602	ABN/2	10	J										
UNKNOWN	1603	ABN/2					2000	J						
UNKNOWN	1621	ABN/2												
UNKNOWN	1633	ABN/2												
UNKNOWN	1638	ABN/2												
UNKNOWN	1639	ABN/2												
UNKNOWN	1640	ABN/2	10	J			2000	J			20	J		
UNKNOWN	1646	ABN/2					8000	J			40	J		
UNKNOWN	1646	ABN/2	20	J										
UNKNOWN	1650	ABN/2												
UNKNOWN	1657	ABN/2	10	J							30	J		
UNKNOWN	1661	ABN/2					2000	J						
UNKNOWN	1674	ABN/2												
UNKNOWN	1682	ABN/2												
UNKNOWN	1698	ABN/2									20	J		
UNKNOWN	1747	ABN/2	20	J										
UNKNOWN	1750	ABN/2									50	J		
UNKNOWN	1752	ABN/2	20	J			3000	J			80	J		
UNKNOWN	1755	ABN/2											8	J
UNKNOWN	1758	ABN/2					3000	J						
UNKNOWN	1764	ABN/2											20	J
UNKNOWN	1769	ABN/2	10	J										

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB
1 - TARGET COMPOUND LIST COMPOUND (TCL) 2 - TENTATIVELY IDENTIFIED COMPOUND (TIC)
J - ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CRQL, OR TCL WITH QA/QC OUT OF CONTROL LIMITS) U - UNDETECTED, DETECTION LIMIT

Chemical Data Summary

SITE NAME AND CODE: GOODSON & SON TRUCKING
CASE NUMBER: 10883

CONCENTRATIONS IN PARTS PER BILLION (ug/L WATER, ug/kg SOIL)
Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

Organic Traffic Number			FJ-120		FJ-121		FJ-122		FJ-123		FJ-124		FJ-125	
Matrix			WATER		WATER		SOIL		SOIL		WATER		WATER	
Percent Moisture							22		17					
Location			STATION #13		STATION #14		STATION #15		STATION #16		STATION #10		STATION #11	
And/Or			NORTH DITCH		TRIP BLANK		NORTH DITCH		SOUTH DITCH		MANHOLE NEAR		SOUTH DITCH	
Sample			NEAR COVE				NEAR COVE		NEAR COVE		ACCESS ROAD		BACKGROUND	
Description							DUPLICATE				NORTH OF SITE		WEST OF	
													MAGNOLIA	
Compound Name	CAS/SCAN	CLASS											STREET	
UNKNOWN	1771	ABN/2											30	J
UNKNOWN	1772	ABN/2												
UNKNOWN	1774	ABN/2					800	J			20	J		
UNKNOWN	1778	ABN/2											20	J
UNKNOWN	1780	ABN/2												
UNKNOWN	1783	ABN/2											20	J
UNKNOWN	1788	ABN/2												
UNKNOWN	1790	ABN/2					1000	J			20	J		
UNKNOWN	1792	ABN/2											20	J
UNKNOWN	1796	ABN/2												
UNKNOWN	1801	ABN/2											30	J
UNKNOWN	1801	ABN/2									20	J		
UNKNOWN	1809	ABN/2											30	J
UNKNOWN	1818	ABN/2											20	J
UNKNOWN	1851	ABN/2	10	J							50	J		
UNKNOWN	1879	ABN/2									20	J		
UNKNOWN	1882	ABN/2												
UNKNOWN	1885	ABN/2									20	J		
UNKNOWN	1903	ABN/2									20	J		
UNKNOWN	1928	ABN/2	10	J			800	J			20	J		
UNKNOWN	1929	ABN/2											10	J
UNKNOWN	1934	ABN/2					2000	J			30	J		
UNKNOWN	1974	ABN/2	10	J										
UNKNOWN	2006	ABN/2												
UNKNOWN	2019	ABN/2	20	J			3000	J			40	J		
UNKNOWN	2072	ABN/2	10	J							20	J		
UNKNOWN	2083	ABN/2									20	J		
UNKNOWN	2102	ABN/2	10	J			2000	J			20	J		
UNKNOWN	2182	ABN/2					2000	J						
UNKNOWN	2257	ABN/2					1000	J						
UNKNOWN ALKANE	2534	ABN/2												
UNKNOWN	2584	ABN/2												
UNKNOWN ALKANE	2597	ABN/2												
UNKNOWN	2622	ABN/2							200	J				
UNKNOWN ALKANE	2661	ABN/2							200	J				
UNKNOWN	2676	ABN/2												
UNKNOWN	2775	ABN/2												
UNKNOWN	2803	ABN/2												
UNKNOWN ALKANE	2815	ABN/2							300	J				
UNKNOWN	2858	ABN/2												

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB
1 - TARGET COMPOUND LIST COMPOUND (TCL) 2 - TENTATIVELY IDENTIFIED COMPOUND (TIC)
J - ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CRQL, OR TCL WITH QA/QC OUT OF CONTROL LIMITS) U - UNDETECTED, DETECTION LIMIT

Chemical Data Summary

ITE NAME AND CODE: GOODSON & SON TRUCKING
ASE NUMBER: 10883

ONCENTRATIONS IN PARTS PER BILLION (ug/L WATER, ug/kg SOIL).
ompiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

Organic Traffic Number	FJ-120	FJ-121	FJ-122	FJ-123	FJ-124	FJ-125
Matrix	WATER	WATER	SOIL	SOIL	WATER	WATER
Percent Moisture			22	17		
Location	STATION #13	STATION #14	STATION #15	STATION #16	STATION #10	STATION #11
And/Or	NORTH DITCH	TRIP BLANK	NORTH DITCH	SOUTH DITCH	MANHOLE NEAR	SOUTH DITCH
Sample	NEAR COVE		NEAR COVE	NEAR COVE	ACCESS ROAD	BACKGROUND
Description			DUPLICATE		NORTH OF SITE	WEST OF
						MAGNOLIA
Compound Name	CAS/SCAN	CLASS				STREET
UNKNOWN	2911	ABN/2				
UNKNOWN	3006	ABN/2				
UNKNOWN	3018	ABN/2				
UNKNOWN	3110	ABN/2				
UNKNOWN	3111	ABN/2				
UNKNOWN	3133	ABN/2				
UNKNOWN	3149	ABN/2				
UNKNOWN	3173	ABN/2				
UNKNOWN	3240	ABN/2				
UNKNOWN	3244	ABN/2				
UNKNOWN	3287	ABN/2				
UNKNOWN	3319	ABN/2				
UNKNOWN	3374	ABN/2				
UNKNOWN	3429	ABN/2				
UNKNOWN	3471	ABN/2				

OA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB
1 - TARGET COMPOUND LIST COMPOUND (TCL) 2 - TENTATIVELY IDENTIFIED COMPOUND (TIC)

Exhibit 3

Inorganic Analysis Results

DATA QUALITY ASSURANCE REVIEW

SITE NAME GOODSON & SON TRUCKING Channelview, TX

SITE CODE TKD981052475

PAN ITX0557SBF

CASE NUMBER 10883

LABORATORY Century Laboratories

SAMPLE NUMBERS

MFH-407	MFH-411	MFH-415	MFH-419
MFH-408	MFH-412	MFH-416	MFH-420
MFH-409	MFH-413	MFH-417	MFH-421
MFH-410	MFH-414	MFH-418	MFH-422

REVIEWER Victor Cason, ICF Technology

DATA EVALUATION

SITE NAME: Goodson & Son Trucking

CASE NUMBER: 10883

SAMPLE NUMBERS: MFH-407, MFH-408, MFH-409, MFH-410, MFH-411, MFH-412, MFH-413, MFH-414, MFH-415, MFH-416, MFH-417, MFH-418, MFH-419, MFH-420, MFH-421, AND MFH-422.

This data package consists of eight water and eight soil samples analyzed for metals and cyanide using low concentration protocols. The following qualifications are placed on the data.

Contractual Violations

1. The laboratory failed to analyze the CRDL standard for arsenic, lead, selenium and thallium.
2. The laboratory failed to analyze an aqueous Laboratory Control Sample for mercury or solid Laboratory Control Sample for mercury and cyanide.
3. The laboratory failed to report the Standard Addition results for lead in samples MFH-410, MFH-411, MFH-415, MFH-416 and MFH-422 on Form 8. Results were within control limits and correct results were reported on Form 1s.
4. A post digestion spike was not analyzed for antimony in the water matrix.
5. A time period of greater than 2 hours between calibration verification was noted in the ICP analysis sequence. The data quality does not appear to be affected significantly.

Data Transcription Errors

Numerous errors were noted in the labs transfer of the raw data to the forms and in flagging the data. These errors are detailed below.

1. Incorrect values for aluminum and calcium were listed on ICP Interference Check Samples (Form 4). Actual values were within control limits, therefore, the data is not affected.
2. The sample result for cyanide was listed incorrectly on the water spike sample recovery Form 5A for sample MFH-412S.
3. Spike sample results for barium and manganese were listed incorrectly on soil spike recovery Form 5A for sample MFH-409S. Corrected recovery for barium remained out of control limits, however, manganese recovery was within control limits.
4. Duplicate results for chromium in water sample MFH-417D were not flagged * as being out of control limits. Form 1s were also not flagged.
5. Incorrect values for the duplicate results of magnesium and sodium were reported in water sample MFH-417D. The lab reported the original instead of the dilution analysis. Results were within control limits when the correct values were used. The Form 1s needs corrections.
6. Duplicate results for cyanide in water sample MFH-412D were flagged by the lab as being out of control limits when in fact they are within control limits.
7. Duplicate results for cobalt in soil sample MFH-409D were flagged by the lab as being out of control limits when in fact they are within control limits.

8. The laboratory failed to flag aluminum, calcium, iron and zinc on Form 1s in the water samples and calcium, copper and nickel on Form 1s in the soil samples to indicate ICP serial dilutions out of control limits.
9. Required W flags were not included for selenium and thallium in several samples.

Sample Specific QA/QC

1. Reported results for calcium in sample MFH-407, MFH-408 and MFH-409 were outside of the reported linear range of the ICP. The samples were not diluted and reanalyzed. Reported concentrations of calcium in these samples are considered estimates (J flag).
2. The recovery of aluminum was out of control limits in one of the continuing calibration verifications. As a result, the reported concentrations of aluminum in samples MFH-410, MFH409L, MFH-417L, the final CRDL sample of the sequence, and the final interference check are considered estimates (J flag).
3. Reported detection limits for selenium in samples MFH-407, MFH-412 and MFH-415 were incorrect as the lab did not take into account sample dilutions.

General QA/QC

1. Antimony and calcium were detected in both the water and soil method blanks at concentrations below the CRDL. Sample concentrations of these metals less than 5 times their concentrations in the associated method blank are flagged "B" on the data summary.
2. The holding time of 14 days for cyanide analysis was exceeded for all samples. Therefore, all cyanide results are considered estimates (J flag).
3. Due to ICP Serial Dilution criteria out of control limits for aluminum, calcium, iron and zinc, all results for these metals in water samples have been flagged as estimates (J flag).
4. Due to ICP Serial Dilution criteria out of control limits for calcium, copper and nickel, all results for these metals in soil samples have been flagged as estimates (J flag).
5. The recovery for mercury in the water matrix spike was unacceptable. The data is considered unusable (R flag) in the water samples.
6. The recoveries for antimony, lead and copper in the soil matrix spike were unacceptable and the data is considered unusable (R flag) in all soil samples.
7. Recoveries for lead, and thallium were out of control limits in the water matrix spike. Reported concentrations and detection limits for these elements are considered estimates in all water samples (J flag). The actual concentrations for lead and thallium could be as great as 1.5 or 2.1 times the reported values, respectively.
8. Recovery of antimony was high in the water matrix spike. Reported concentrations of antimony are considered as estimates (J flag) and actual concentrations may be as low as 0.23 times that reported. Reported detection limits are acceptable.
9. Recoveries for arsenic, barium, beryllium, cadmium, chromium, cobalt, nickel, selenium, silver, thallium, vanadium, and zinc were out of control limits in the soil matrix spike, MFH-409S. Reported concentrations and detection limits of these metals are considered estimates (J flag). The actual concentrations could be as great as 1.4, 1.5, 1.4, 1.6, 1.5, 1.5, 1.4, 3.3, 2.6, 1.3, 1.5. and 1.5 times the reported values, respectively.

10. Most recoveries in the soil post digestion spike, MFH-409, were within control limits. This indicates that there was a problem with the digestion procedure. Those elements still out of control limits were antimony and copper indicating possible matrix problems with these metals.
11. Reported concentrations for chromium in water samples are considered estimates (J flag) due to duplicate criteria out of control limits.
12. Results for copper in the soil duplicate were unacceptable and all results have been flagged as unusable (R flag) in the soil samples.

INORGANIC ANALYSIS SUMMARY FOR SOIL

SITE NAME AND NUMBER: GOODSON & SON TRUCKING
CASE NUMBER: 10883 PAGE 1 OF 2
CONCENTRATIONS IN PARTS PER MILLION (PPM)

TRAFFIC REPORT NUMBER AND STATION LOCATION.

		MFH-407	MFH-408	MFH-409	MFH-410	MFH-411
		STATION #01 FILL MATERIAL	STATION #02 NORTH DITCH NEAR STORM SEWER	STATION #03 SOUTH DITCH	STATION #04 NORTH DITCH ABOVE SEWER	STATION #05 SOUTH DITCH BACKGROUND
	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL
	% MOISTURE	35	27	32	31	14
	CAS NO.					
ALUMINUM	7429-90-5	9890	5940	8790	9340J	2170
ANTIMONY	7440-36-0	OR	OR	OR	OR	OR
ARSENIC	7440-38-2	5.800J	2.800J	4.110J	4.400J	1.400J
BARIUM	7440-39-3	29.400J	53.400J	55.400J	138J	84.400J
BERYLLIUM	7440-41-7	0.920UJ	0.830UJ	0.880UJ	0.870UJ	0.700UJ
CADMIUM	7440-43-9	1.500J	1.600J	2.050J	2.040J	0.930J
CALCIUM	7440-70-2	159000J	138000J	153000J	151000J	17200J
CHROMIUM	7440-47-3	9.800J	6.050J	15.200J	16.300J	5.350J
COBALT	7440-48-4	1.530UJ	1.380UJ	2.350J	2.300J	1.160UJ
COPPER	7440-50-8	OR	OR	OR	OR	OR
IRON	7439-89-6	9130	6460	8660	8190	3500
LEAD	7439-92-1	OR	OR	OR	OR	OR
MAGNESIUM	7439-95-4	1920	2110	3100	3240	1069
MANGANESE	7439-96-5	96.300	69.900	149	177	111
MERCURY	7439-97-6	0.150U	0.140U	0.140U	0.140U	0.110U
NICKEL	7440-02-0	7.400J	7.900J	13.500J	18.500J	3.950J
POTASSIUM	7440-09-7	8240	4301	5510	4210	497
SELENIUM	7782-49-2	9.200UJ	0.830UJ	0.880UJ	0.870UJ	0.700UJ
SILVER	7440-22-4	0.920UJ	0.830UJ	0.880UJ	0.870UJ	0.700UJ
SODIUM	7440-23-5	2000	2047	865	634	80
THALLIUM	7440-28-0	1.230UJ	1.100UJ	1.170UJ	1.170UJ	0.930J
TIN	7440-31-5	ONA	ONA	ONA	ONA	ONA
VANADIUM	7440-62-2	17.200J	15.400J	17J	21.600J	7.700J
ZINC	7440-66-6	38.300J	33.600J	37.600J	58.600J	76J
CYANIDE		3J	1.300UJ	1.320UJ	1.400UJ	1.200UJ
HARDNESS		ONA	ONA	ONA	ONA	ONA
ALKALINITY		ONA	ONA	ONA	ONA	ONA

R - DATA IS UNUSABLE DUE TO QA/QC OUT OF CONTROL LIMITS.
J - REPORTED CONCENTRATIONS OR DETECTION LIMITS ARE ESTIMATES DUE TO QA/QC OUT OF CONTROL LIMITS.
B - CONCENTRATION IN SAMPLE ATTRIBUTABLE TO BLANK CONTAMINATION.
U - NOT DETECTED; VALUE REPORTED IS THE DETECTION LIMIT.
NA - NOT ANALYZED

INORGANIC ANALYSIS SUMMARY FOR SOIL

SITE NAME AND NUMBER: GOODSON & SON TRUCKING
CASE NUMBER: 10883 PAGE 2 OF 2
CONCENTRATIONS IN PARTS PER MILLION (PPM)

TRAFFIC REPORT NUMBER AND STATION LOCATION.

		MFH-416	MFH-419	MFH-420		
		STATION #12 NORTH DITCH NEAR COVE	STATION #15 NORTH DITCH NEAR COVE DUPLICATE	STATION #16 SOUTH DITCH NEAR COVE		
	MATRIX	SOIL	SOIL	SOIL		
	% MOISTURE	18	19	19	0	0
	CAS NO.					
ALUMINUM	7429-90-5	801	687	8310	0	0
ANTIMONY	7440-36-0	OR	OR	OR	0	0
ARSENIC	7440-38-2	0.980UJ	0.990UJ	3.200J	0	0
BARIUM	7440-39-3	15.900J	18.800J	100J	0	0
BERYLLIUM	7440-41-7	0.730UJ	0.740UJ	0.740J	0	0
CADMIUM	7440-43-9	0.730J	0.740J	1.200J	0	0
CALCIUM	7440-70-2	21000J	21000J	38500J	0	0
CHROMIUM	7440-47-3	5.100J	4.200J	10.600J	0	0
COBALT	7440-48-4	1.220UJ	1.200UJ	3.450J	0	0
COPPER	7440-50-8	OR	OR	OR	0	0
IRON	7439-89-6	1800	2050	9440	0	0
LEAD	7439-92-1	OR	OR	OR	0	0
MAGNESIUM	7439-95-4	1490	1540	2530	0	0
MANGANESE	7439-96-5	6030	61.100	177	0	0
MERCURY	7439-97-6	0.100U	0.080U	0.370	0	0
NICKEL	7440-02-0	2.700J	2.700J	7.600J	0	0
POTASSIUM	7440-09-7	249	220	2630	0	0
SELENIUM	7782-49-2	0.730UJ	0.740UJ	0.740UJ	0	0
SILVER	7440-22-4	0.730UJ	0.740UJ	0.740UJ	0	0
SODIUM	7440-23-5	1080	960	5100	0	0
THALLIUM	7440-28-0	0.980UJ	0.990UJ	0.990UJ	0	0
TIN	7440-31-5	ONA	ONA	ONA	0	0
VANADIUM	7440-62-2	3.700J	3.200J	24.700J	0	0
ZINC	7440-66-6	18.300J	14.100J	46.400J	0	0
CYANIDE		1.200J	1.020UJ	0.990UJ	0	0
HARDNESS		ONA	ONA	ONA	0	0
ALKALINITY		ONA	ONA	ONA	0	0

R - DATA IS UNUSABLE DUE TO QA/QC OUT OF CONTROL LIMITS.
J - REPORTED CONCENTRATIONS OR DETECTION LIMITS ARE ESTIMATES DUE TO QA/QC OUT OF CONTROL LIMITS.
B - CONCENTRATION IN SAMPLE ATTRIBUTABLE TO BLANK CONTAMINATION.
U - NOT DETECTED; VALUE REPORTED IS THE DETECTION LIMIT.
NA - NOT ANALYZED

INORGANIC ANALYSIS SUMMARY FOR WATER

SITE NAME AND NUMBER: GOODSON & SON TRUCKING
CASE NUMBER: 10883 PAGE 1 OF 2
CONCENTRATIONS IN PARTS PER BILLION (PPB)

TRAFFIC REPORT NUMBER AND STATION LOCATION.

		DRINKING WATER CRITERIA	MFH-412	MFH-413	MFH-414	MFH-415	MFH-417
		P - PRIMARY S - SECONDARY	STATION #06 NORTH DITCH NEAR STORM SEWER	STATION #07 NORTH DITCH NEAR COVE	STATION #08 SOUTH DITCH NEAR SITE ENTRANCE	STATION #09 SOUTH DITCH NEAR COVE	STATION #13 NORTH DITCH NEAR COVE
	MATRIX		WATER	WATER	WATER	WATER	WATER
	% MOISTURE		100	100	100	100	100
	CAS NO.						
ALUMINUM	7429-90-5		2850J	435J	114J	128J	476J
ANTIMONY	7440-36-0		68JB	61JB	21JB	69JB	58JB
ARSENIC	7440-38-2	50P	25	4U	4U	4U	4U
BARIUM	7440-39-3	1000P	180	94	4U	116	94
BERYLLIUM	7440-41-7		3U	3U	3U	3U	3U
CADMIUM	7440-43-9	10P	7	9	7	13	8
CALCIUM	7440-70-2		65200J	93798J	22500J	179080J	93600J
CHROMIUM	7440-47-3	50P	21J	25J	7J	43J	28J
COBALT	7440-48-4		5U	5U	5U	6	5U
COPPER	7440-50-8	1000S	30	12	30	5	11
IRON	7439-89-6	300S	2820J	495J	415J	173J	539J
LEAD	7439-92-1	50P	20J	10J	12J	1UJ	1UJ
MAGNESIUM	7439-95-4		5560	185000	3810	511000	184000
MANGANESE	7439-96-5	50S	214	87	69	215	89
MERCURY	7439-97-6	2P	OR	OR	OR	OR	OR
NICKEL	7440-02-0		45	33	21	48	32
POTASSIUM	7440-09-7		1950000	136000	12200	155631	174000
SELENIUM	7782-49-2	10P	30U	3U	3U	30U	3U
SILVER	7440-22-4	50P	3U	5J	3U	8J	4J
SODIUM	7440-23-5		912000	1740000	814000	4870000	1700000
THALLIUM	7440-28-0		4UJ	4UJ	4UJ	4UJ	4UJ
TIN	7440-31-5		ONA	ONA	ONA	ONA	ONA
VANADIUM	7440-62-2		12	21	4U	30	20
ZINC	7440-66-6	5000S	249J	121J	125J	557J	337J
CYANIDE			29J	10UJ	10UJ	21J	10UJ
HARDNESS			ONA	ONA	ONA	ONA	ONA
ALKALINITY			ONA	ONA	ONA	ONA	ONA

R - DATA IS UNUSABLE DUE TO QA/QC OUT OF CONTROL LIMITS.
J - REPORTED CONCENTRATIONS OR DETECTION LIMITS ARE ESTIMATES DUE TO QA/QC OUT OF CONTROL LIMITS.
B - CONCENTRATION IN SAMPLE ATTRIBUTABLE TO BLANK CONTAMINATION.
U - NOT DETECTED; VALUE REPORTED IS THE DETECTION LIMIT.
NA - NOT ANALYZED

INORGANIC ANALYSIS SUMMARY FOR WATER

SITE NAME AND NUMBER: GOODSON & SON TRUCKING
CASE NUMBER: 10883 PAGE 2 OF 2
CONCENTRATIONS IN PARTS PER BILLION (PPB)

TRAFFIC REPORT NUMBER AND STATION LOCATION.

		DRINKING WATER CRITERIA P - PRIMARY S - SECONDARY	MFH-418 STATION #14 TRIP BLANK	MFH-421 STATION #10 STORM SEWER NEAR ACCESS ROAD	MFH-422 STATION #11 SOUTH DITCH BACKGROUND		
	MATRIX		WATER	WATER	WATER		
	% MOISTURE		100	100	100	0	0
	CAS NO.						
ALUMINUM	7429-90-5		17J	256J	314J	0	0
ANTIMONY	7440-36-0		54JB	32JB	24JB	0	0
ARSENIC	7440-38-2	50P	4U	4.010	4U	0	0
BARIUM	7440-39-3	1000P	4U	44	4	0	0
BERYLLIUM	7440-41-7		3U	3U	3U	0	0
CADMIUM	7440-43-9	10P	3	4	3	0	0
CALCIUM	7440-70-2		198J	42200J	19957J	0	0
CHROMIUM	7440-47-3	50P	3UJ	4J	6J	0	0
COBALT	7440-48-4		5U	5U	5U	0	0
COPPER	7440-50-8	1000S	3	13	14	0	0
IRON	7439-89-6	300S	32UJ	430J	484J	0	0
LEAD	7439-92-1	50P	1UJ	4J	4J	0	0
MAGNESIUM	7439-95-4		46	3160	5340	0	0
MANGANESE	7439-96-5	50S	4U	48	55	0	0
MERCURY	7439-97-6	2P	0R	0R	0R	0	0
NICKEL	7440-02-0		8U	13	17	0	0
POTASSIUM	7440-09-7		275	7160	8855	0	0
SELENIUM	7782-49-2	10P	3U	3U	3U	0	0
SILVER	7440-22-4	50P	3U	3U	3U	0	0
SODIUM	7440-23-5		279	34400	316588	0	0
THALLIUM	7440-28-0		4UJ	4UJ	4UJ	0	0
TIN	7440-31-5		0NA	0NA	0NA	0	0
VANADIUM	7440-62-2		4	9	4	0	0
ZINC	7440-66-6	5000S	8J	635J	272J	0	0
CYANIDE			20J	10UJ	10UJ	0	0
HARDNESS			0NA	0NA	0NA	0	0
ALKALINITY			0NA	0NA	0NA	0	0

R - DATA IS UNUSABLE DUE TO QA/QC OUT OF CONTROL LIMITS.
J - REPORTED CONCENTRATIONS OR DETECTION LIMITS ARE ESTIMATES DUE TO QA/QC OUT OF CONTROL LIMITS.
B - CONCENTRATION IN SAMPLE ATTRIBUTABLE TO BLANK CONTAMINATION.
U - NOT DETECTED: VALUE REPORTED IS THE DETECTION LIMIT.
NA - NOT ANALYZED

Exhibit 4

Commonly Occurring Metals in the Soil

by
W.L. Lindsey
(Chemical Equilibria in Soils)
Wiley Intersciences, N.Y.

	PRIMARY DRINKING WATER REGS (PPM)	SECONDARY DRINKING WATER REGS (PPM)	CHARACTERISTIC OF EP TOXICITY (PPM)	U.S. PUBLIC HEALTH SERVICE LIMIT (PPM)	COMMON RANGE IN SOIL (PPM)
ALUMINUM	----	----	----	----	10000-300000
ANTIMONY	----	----	----	----	2-10
ARSENIC	0.05	----	5.0	0.05	1-50
BARIUM	1.0	----	100	----	100-3000
BORON	----	----	----	----	2-100
BERYLLIUM	----	----	----	NOT GIVEN	0.1-40
BROMINE	----	----	----	----	1-10
CADMIUM	0.01	----	1.0	0.01	0.01-0.7
CALCIUM	----	----	----	----	----
CESIUM	----	----	----	----	0.3-25
CHLORINE	----	250	----	----	20-900
CHROMIUM	0.05	----	5.0	0.05	1-1000
COBALT	----	----	----	----	1-40
COPPER	----	1.0	----	1.0	2-100
GALLIUM	----	----	----	----	0.4-300
IODI	----	----	----	----	0.1-40
IRON	----	0.3	----	0.05	10-4000
LANTHANUM	----	----	----	----	1-5000
LEAD	0.05	----	5.0	0.05	2-200
LITHIUM	----	----	----	----	5-200
MA SIUM	----	----	----	----	600-6000
MANGANESE	----	0.05	----	0.05	20-3000
MERCURY	0.002	----	0.2	NOT GIVEN	0.01-0.3
MOLYBDENUM	----	----	----	----	0.2-5
NICKEL	----	----	----	----	5-500
POTASSIUM	----	----	----	----	----
RADIUM	----	----	----	----	8 X 10 -5
RUBIDIUM	----	----	----	----	50-500
SELENIUM	0.01	----	1.0	0.01	0.1-2
SILVER	0.05	----	5.0	0.05	0.01-5
SODIUM	----	----	----	----	----
STRONTIUM	----	----	----	----	50-1000
THALLIUM	----	----	----	----	----
TIN	----	----	----	----	2-200
URANIUM	----	----	----	----	0.9-9
VA IUM	----	----	----	----	20-500
YTTRIUM	----	----	----	----	25-250
ZINC	----	5.0	----	5.0	10-300
ZIRCONIUM	----	----	----	----	60-2000
CYANIDE	----	----	----	----	----
HARDNESS	----	----	----	----	----
ALKALINITY	----	----	----	----	----

TABLE 1
Conductivity, Temperature, and pH Measurements for all Water Samples Collected at Goodson & Son Trucking

TABLE 1

WATER SAMPLE MEASUREMENTS

SAMPLE NUMBER	CONDUCTIVITY (MICROMHOS/CM)	TEMPERATURE °C	pH
6	12000	20	11.7
7	9000	19	8.2
8	1300	24	7.1
9	15000	24	7.3
10	500	21	6.9
11	1200	24	7.3
13	9000	19	8.2

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

CHAIN OF CUSTODY RECORD

PROJ. NO. 10883 | PROJECT NAME

SAMPLERS: (Signature) TD Pierce

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	GC/MS Hexane Residue	GC/MS Hexane Residue PCB	VOA				REMARKS Tag #'s	REMARKS C-L-P sample #
03	11/15/88	1006 1008		✓	South Ditch	1	✓	✓					6-014033	FJ 112
03	11/15/88	1006 1008		✓	South Ditch	2			✓				6-014034, 6-014035	FJ 112
05	11/15/88	0933 0935		✓	South Ditch Background West of Magnolia	1	✓	✓					6-014031	FJ 114
05	11/15/88	0933 0935		✓	South Ditch Background West of Magnolia	2			✓				6-014032, 6-014033	FJ 114
16	11/15/88	1036 1038		✓	South ditch near cove	1	✓	✓					6-014107	FJ 123
16	11/15/88	1036 1038		✓	South ditch near cove	2			✓				6-014108, 6-014109	FJ 123
01	11/15/88	1054 1056		✓	Fill Material	1	✓	✓					6-014015	FJ 110
01	11/15/88	1054 1056		✓	Fill Material	2			✓				6-014016, 6-014017	FJ 110
11	11/15/88	0935 0941		✓	South Ditch Background West of Magnolia	4	✓	✓					6-014119 6-014121 6-014120 6-014122	FJ 125
11	11/15/88	0935 0941		✓	South Ditch Background West of Magnolia	2			✓				6-014123, 6-014124	FJ 125
09	11/15/88	1036 1043		✓	South Ditch Near Cove	4	✓	✓					6-014075 6-014077 6-014076 6-014078	FJ 118
09	11/15/88	1036 1043		✓	South Ditch Near Cove	2			✓				6-014079 6-014080	FJ 118
08	11/15/88	1005 1012		✓	South Ditch	4	✓	✓					6-014067 6-014069 6-014068 6-014070	FJ 117
08	11/15/88	1005 1012		✓	South Ditch	2			✓				6-014071, 6-014072	FJ 117

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
TD Pierce	11/15/88 1600	Federal Express			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
				Airbill # 946832 1380	
				OTR #	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

6-05921

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

Organics

CHAIN OF CUSTODY RECORD

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

PROJ. NO. 10833

PROJECT NAME

SAMPLERS: *(Signature)* [illegible]

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	GC/MS [illegible]	Pesticides	VOA				REMARKS Tag #'s CLP [illegible] #
10	1/16/88	0931 0915		✓	Storm Sewer [illegible] Road	6	2	2	2				6-014114 6-014115 6-014112 [illegible] 6-014116 [illegible]113 [illegible]

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
[illegible]	1/16/88 1800	[illegible] Express			

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*

Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks
				Airbill # 946832136 5

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

6-05918

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
10883	

SAMPLERS: *(Signature)* [signature] [signature]

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CON-TAINERS	GC/MS: ABN's	Pesticides/PCB	VOA's				REMARKS Tag #'s	CLP Sample #'s
06	11/16/88	0943 1002		✓	North Ditch near storm conduit	6	✓						6-014050 ✓ 6-014051 ✓ 6-014049 ✓ 6-014036 ✓ 6-014048 ✓ 6-014052 ✓	FJ 115
06	11/16/88	0943 1002		✓	North Ditch near storm Conduit	6		✓					6-014055 ✓ 6-014057 ✓ 6-014063 ✓ 6-014054 ✓ 6-014056 ✓ 6-014058 ✓	FJ-115
06	11/16/88	0943 1002		✓	North Ditch near storm Conduit	6			✓				6-014038 ✓ 6-014043 ✓ 6-014039 ✓ 6-014040 ✓ 6-014042 ✓	FJ 115
04	11/16/88	0904 0907		✓	North ditch above storm sewer	3	✓	✓	2				6-014029 6-014027 6-014028	FJ 113
02	11/16/88	0939 0941		✓	North ditch near underground Storm conduit	3	✓	✓	2				6-014020 6-014019 6-014021	FJ 111

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
[signature] [signature]	11/16/88	Federal Express			
Relinquished by: *(Signature)*	**Date / Time**	**Received by:** *(Signature)*	**Relinquished by:** *(Signature)*	**Date / Time**	**Received by:** *(Signature)*

Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks
				Airbill # 9468321365

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

6-05917

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
10833	

SAMPLERS: *(Signature)* [signature] Vicki Cason

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	GC/MS, ABN, Pesticides, PCB	GC/MS, VOA					REMARKS
													Tag # / CLP Sample #
15	11/16/88	1101 1103		✓	North Ditch near cove	3	~~2~~ 1	~~2~~ 1	2				6-014103 6-014105 6-014104 FJ122
12	11/16/88	1059 1101		✓	North Ditch near Cove	3	✓	✓	2				6-014083 6-014085 6-014084 FJ119
07	11/16/88	1114 1117		✓	North Ditch near cove	6	2	2	2				6-014059 6-014061 6-014063 6-014060 6-014062 6-014064 FJ116
14	11/15/88	1030 1040		✓	Trip Blank	6	2	2	2				6-014095 6-014097 6-014099 6-014096 6-014098 6-014100 FJ121
13	11/16/88	1108 ~~1110~~ 1112		✓	North Ditch near cove	6	2	2	2				6-014087 6-014089 6-014091 6-014088 6-014090 6-014092 FJ120

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
[signature] Vicki Cason	11/16/88 1800	Federal Express			
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	
				Airbill # 946832136 5	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

6-05916

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

Inorganic

CHAIN OF CUSTODY RECORD

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

PROJ. NO. 10883

PROJECT NAME

SAMPLERS: (Signature) TD Pierce

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Metals	Cyanide					Traffic Report #'s	CLP Sample #
03	11/15/88	1006 1008		✓	South Ditch	2 1	✓	✓					6-014026	MFH 409
05	11/15/88	0933 0935		✓	South Ditch Background west of magnolia	1	✓	✓					6-014034	MFH 411
16	11/15/88	1036 1038		✓	South Ditch near cove	1	✓	✓					6-014110	MFH 420
01	11/15/88	1054 1056		✓	Fill Material	1	✓	✓					6-014018	MFH 407
11	11/15/88	0935 0941		✓	South ditch background west of Magnolia	2	✓	✓					6-014125, 6-014126	MFH 422
~~1609~~	~~11/15/88~~	~~1036~~ ~~1038~~		✓	~~South Ditch Near Cove~~	~~2~~	✓	✓	90					
09	11/15/88	1036 1043		✓	South Ditch Near Cove	2	✓	✓					6-014081, 6-014082	MFH 415
08	11/15/88	1005 1012		✓	South Ditch	2	✓	✓					6-014073, 6-014074	MFH 414

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
TD Pierce	11/15/88 1600	Federal Express			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
				Airbill # 946832123 6 I.T.R # 1035	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

6-05920

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

CHAIN OF CUSTODY RECORD

PROJ. NO.: 10883

PROJECT NAME:

SAMPLERS: *(Signature)* Steven Cowan, [illegible], Victor Cason

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Metals	Cyanide					REMARKS: Tag #'s	CLP Sample #'s
15	11/16/88	1101 1103		✓	North Ditch near cove	1	✓	✓					6-014106✓	MFH 419
12	11/16/88	1059 1101		✓	North Ditch near cove	1	✓	✓					6-014086✓	MFH 416
Ø7	11/16/88	1114 1117		✓	North Ditch near cove	2	✓	✓					6-014065✓ 6-014066✓	MFH 413
14	11/15/88	1030 1040		✓	Trip Blank	2	✓	✓					6-014101✓ 6-014102✓	MFH 418
13	11/16/88	1108 1112		✓	North ditch near cove	2	✓	✓					6-014093✓ 6-014094✓	MFH 417
06	11/16/88	0943 1002		✓	North ditch near storm conduit	4	✓	✓					6-014046✓ 6-014044✓ 6-014047✓ 6-014045✓	MFH 412
10	11/16/88	0901 0915		✓	Storm Sewer near access road	2	✓	✓					6-014117✓ 6-014118✓	MFH 421
02	11/16/88	0939 0941		✓	North ditch near underground storm conduit	1	✓	✓					6-014022✓	MFH 408
04	11/16/88	0904 0907		✓	North ditch above sewer	1	✓	✓					6-014030✓	MFH 410

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Steven Cowan, [illegible], Victor Cason	11/16/88 1800	Federal Express			
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*

Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks
				Airbill # 9468321376

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

6-05915

Photograph Number 1

Site Name: Goodson & Son Trucking

CERCLIS: TXD981052475

Location: Channelview, TX

TDD Number: F-6-8809-29

Photographer: Victor Cason

Witness: Terry Pierce

Date: November 15, 1988

Time: 0934

Direction: Northeast

Comments: Sample location 05, west of Market and Magnolia street intersection.

(This photograph matches negative number 0)

Photograph Number 2

Site Name: Goodson & Son Trucking

CERCLIS: TXD981052475

Location: Channelview, TX

TDD Number: F-6-8809-29

Photographer: Victor Cason

Witness: Terry Pierce

Date: November 15, 1988

Time: 0936

Direction: East

Comments: Sample location 11, west of Market and Magnolia street intersection.

(This photograph matches negative number 1)

Photograph Number 3

Site Name: Goodson & Son Trucking

Location: Channelview, TX

Photographer: Victor Cason

Date: November 15, 1988

Direction: North

CERCLIS: TXD981052475

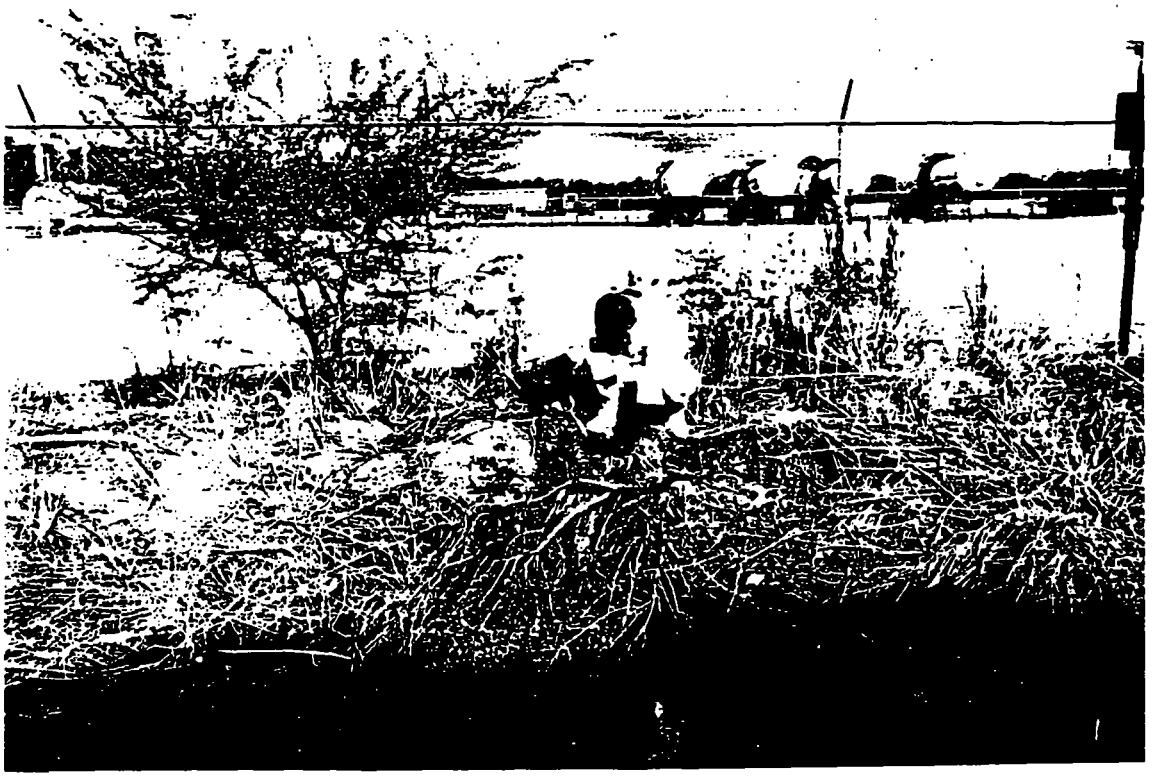
TDD Number: F-6-8809-29

Witness: Terry Pierce

Time: 1008

Comments: Sample location 03, adjacent to site and between the two entrances for the site.

(This photograph matches negative number 2)



Photograph Number 4

Site Name: Goodson & Son Trucking

CERCLIS: TXD981052475

Location: Channelview, TX

TDD Number: F-6-8809-29

Photographer: Victor Cason

Witness: Terry Pierce

Date: November 15, 1988

Time: 1009

Direction: Northeast

Comments: Sample location 08, between the two entrances of the site in the south ditch.

(This photograph matches negative number 3)

Photograph Number 5

Site Name: Goodson & Son Trucking

CERCLIS: TXD981052475

Location: Channelview, TX

TDD Number: F-6-8809-29

Photographer: Victor Cason

Witness: Terry Pierce

Date: November 15, 1988

Time: 1036

Direction: Northwest

Comments: Sample location 16, near the southwest corner of the site in the south ditch.

(This photograph matches negative number 4)

Photograph Number 6

Site Name: Goodson & Son Trucking

Location: Channelview, TX

Photographer: Victor Cason

Date: November 15, 1988

Direction: Northwest

CERCLIS: TXD981052475

TDD Number: F-6-8809-29

Witness: Terry Pierce

Time: 1037

Comments: Sample location 09, near the southwest corner of the site in the south ditch.

(This photograph matches negative number 5)

Photograph Number 7

Site Name: Goodson & Son Trucking

Location: Channelview, TX

Photographer: Victor Cason

Date: November 15, 1988

Direction: Northwest

CERCLIS: TXD981052475

TDD Number: F-6-8809-29

Witness: Terry Pierce

Time: 1055

Comments: Sample location 01, sample of fill material onsite.

(This photograph matches negative number 6)

Photograph Number 8

Site Name: Goodson & Son Trucking

CERCLIS: TXD981052475

Location: Channelview, TX

TDD Number: F-6-8809-29

Photographer: Victor Cason

Witness: Terry Pierce

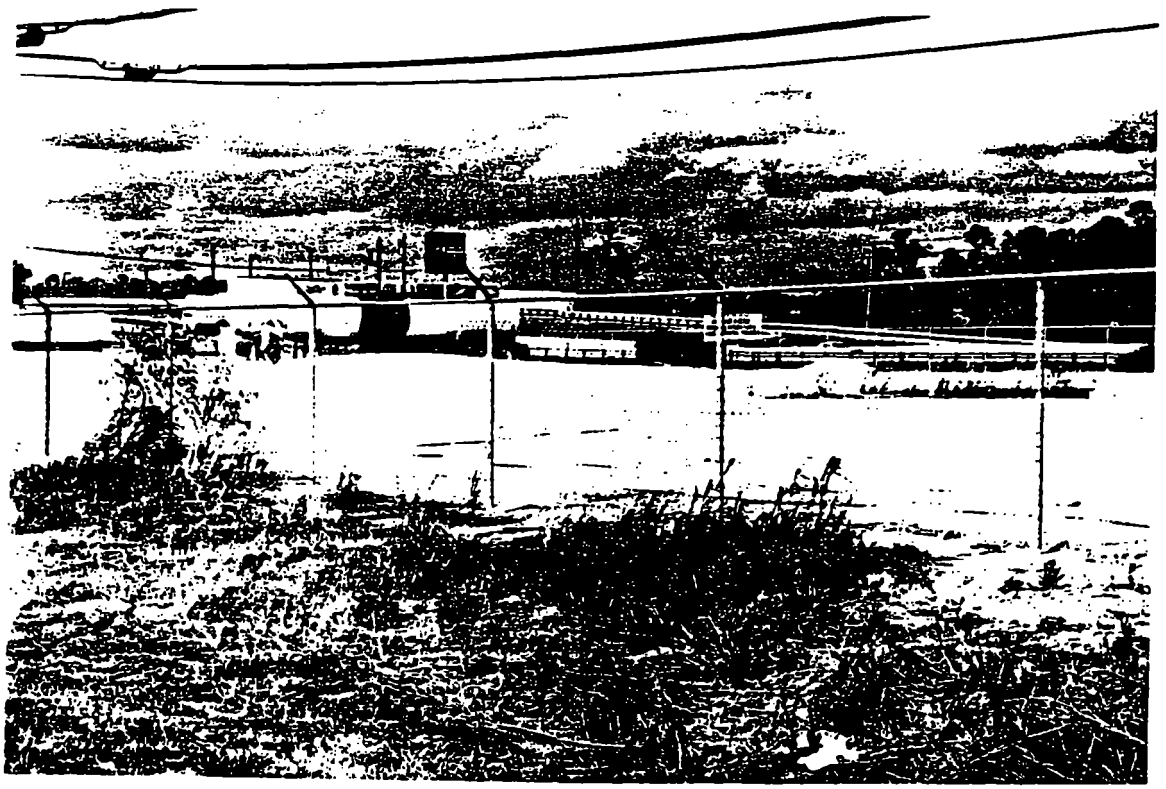
Date: November 15, 1988

Time: 1055

Direction: Northwest

Comments: Sample location 01, collection of sample completed.

(This photograph matches negative number 7)



Photograph Number 9

Site Name: Goodson & Son Trucking

CERCLIS: TXD981052475

Location: Channelview, TX

TDD Number: F-6-8809-29

Photographer: Derrick Johnson

Witness: Joe Phillips

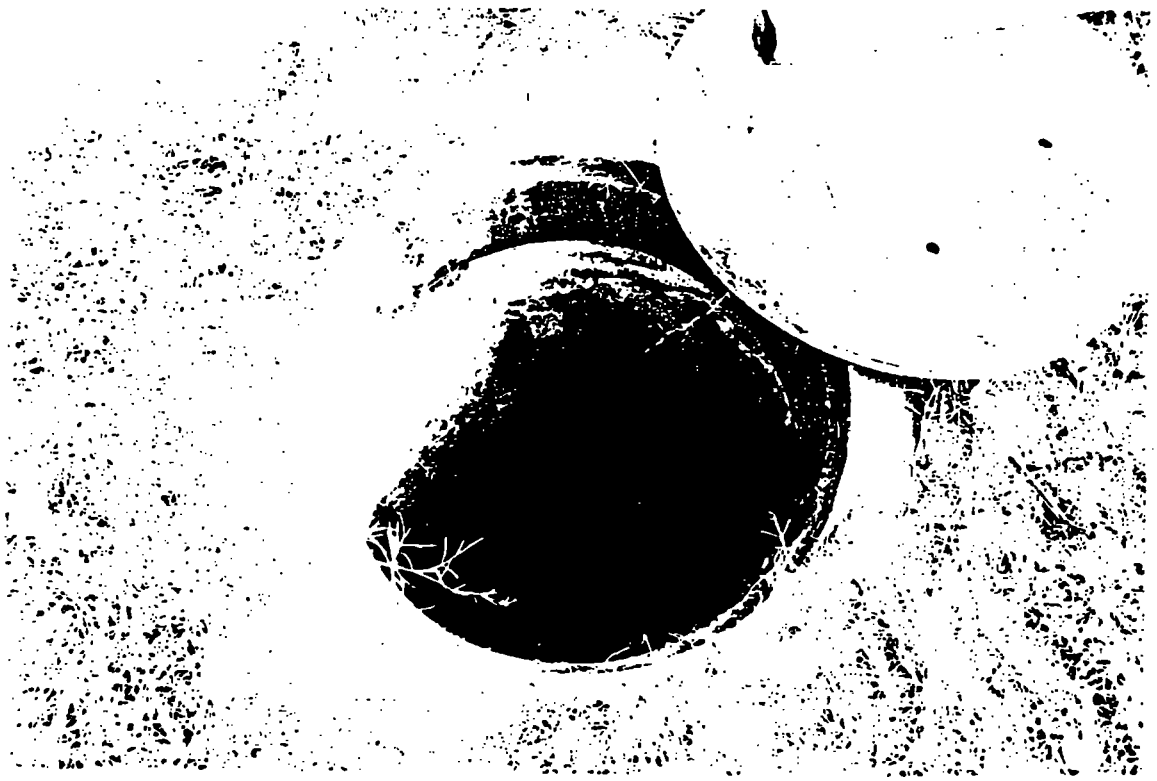
Date: November 16, 1988

Time: 0901

Direction: West

Comments: Sample location 10, manhole adjacent to highway I-10 access road, north of the site.

(This photograph matches negative number 8)



Photograph Number 10

Site Name: Goodson & Son Trucking

CERCLIS: TXD981052475

Location: Channelview, TX

TDD Number: F-6-8809-29

Photographer: Derrick Johnson

Witness: Joe Phillips

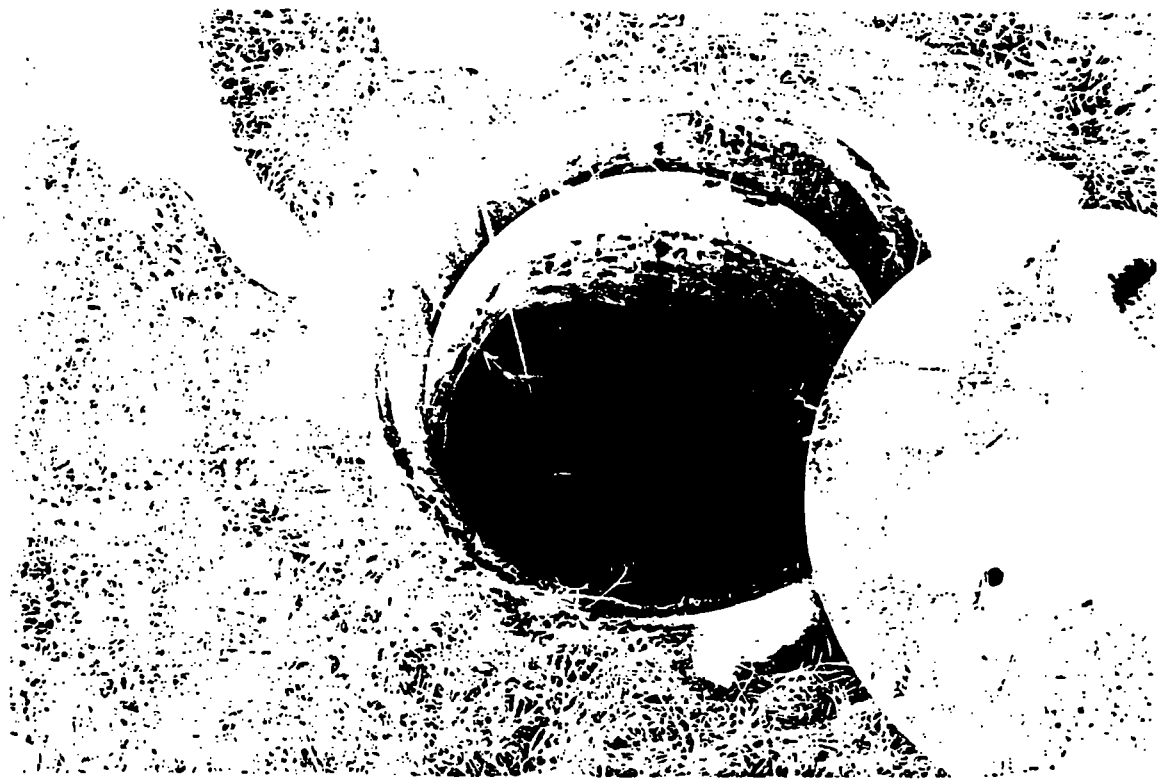
Date: November 16, 1988

Time: 0903

Direction: Northwest

Comments: Sample location 10, collection of the sample in the manhole.

(This photograph matches negative number 9)



Photograph Number 11

Site Name: Goodson & Son Trucking

Location: Channelview, TX

Photographer: Derrick Johnson

Date: November 16, 1988

Direction: South

CERCLIS: TXD981052475

TDD Number: F-6-8809-29

Witness: Joe Phillips

Time: 0903

Comments: Sample location 04, between the site and the access road in the north ditch.

(This photograph matches negative number 10)

Photograph Number 12

Site Name: Goodson & Son Trucking

CERCLIS: TXD981052475

Location: Channelview, TX

TDD Number: F-6-8809-29

Photographer: Derrick Johnson

Witness: Joe Phillips.

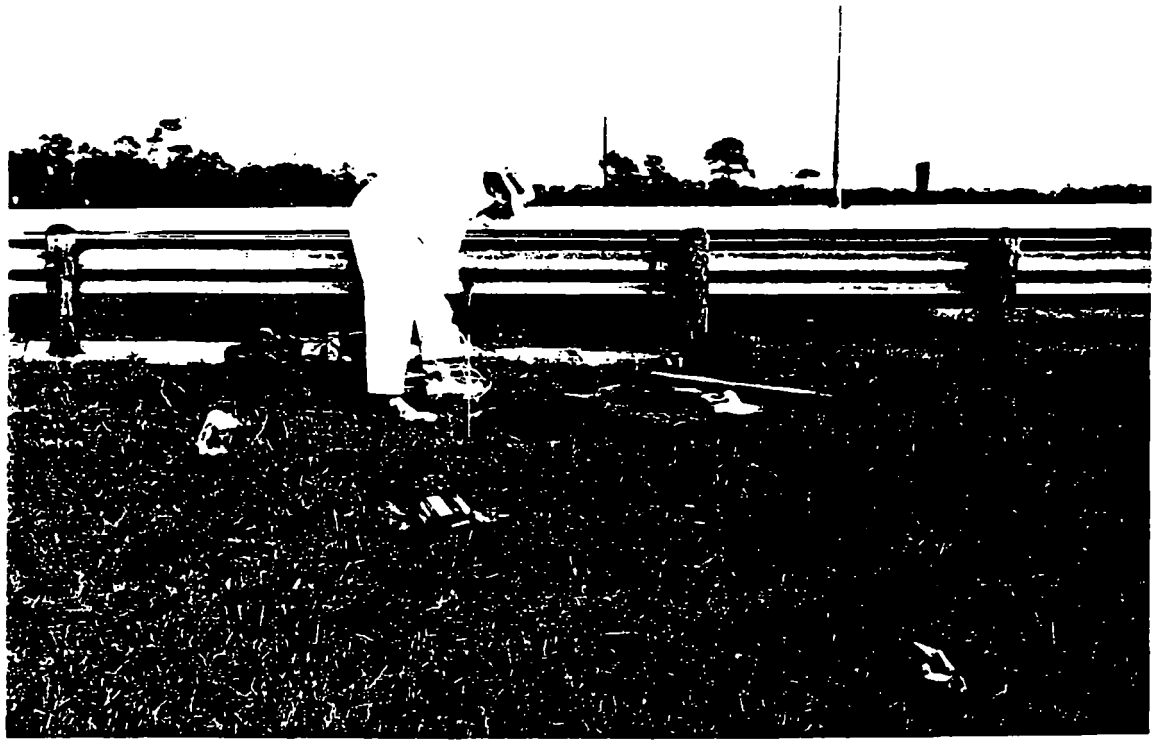
Date: November 16, 1988

Time: 0906

Direction: North

Comments: Sample location 10, collection of the sample.

(This photograph matches negative number 11)



Photograph Number 13

Site Name: Goodson & Son Trucking

CERCLIS: TXD981052475

Location: Channelview, TX

TDD Number: F-6-8809-29

Photographer: Derrick Johnson

Witness: Joe Phillips

Date: November 16, 1988

Time: 0907

Direction: Southeast

Comments: Sample location 04, collection of the sample.

(This photograph matches negative number 12)

Photograph Number 14

Site Name: Goodson & Son Trucking

Location: Channelview, TX

Photographer: Derrick Johnson

Date: November 16, 1988

Direction: North

CERCLIS: TXD981052475

TDD Number: F-6-8809-29

Witness: Joe Phillips

Time: 0910

Comments: Sample location 10, taking the conductivity and pH of the sample.

(This photograph matches negative number 13)

Photograph Number 15

Site Name: Goodson & Son Trucking

CERCLIS: TXD981052475

Location: Channelview, TX

TDD Number: F-6-8809-29

Photographer: Derrick Johnson

Witness: Joe Phillips

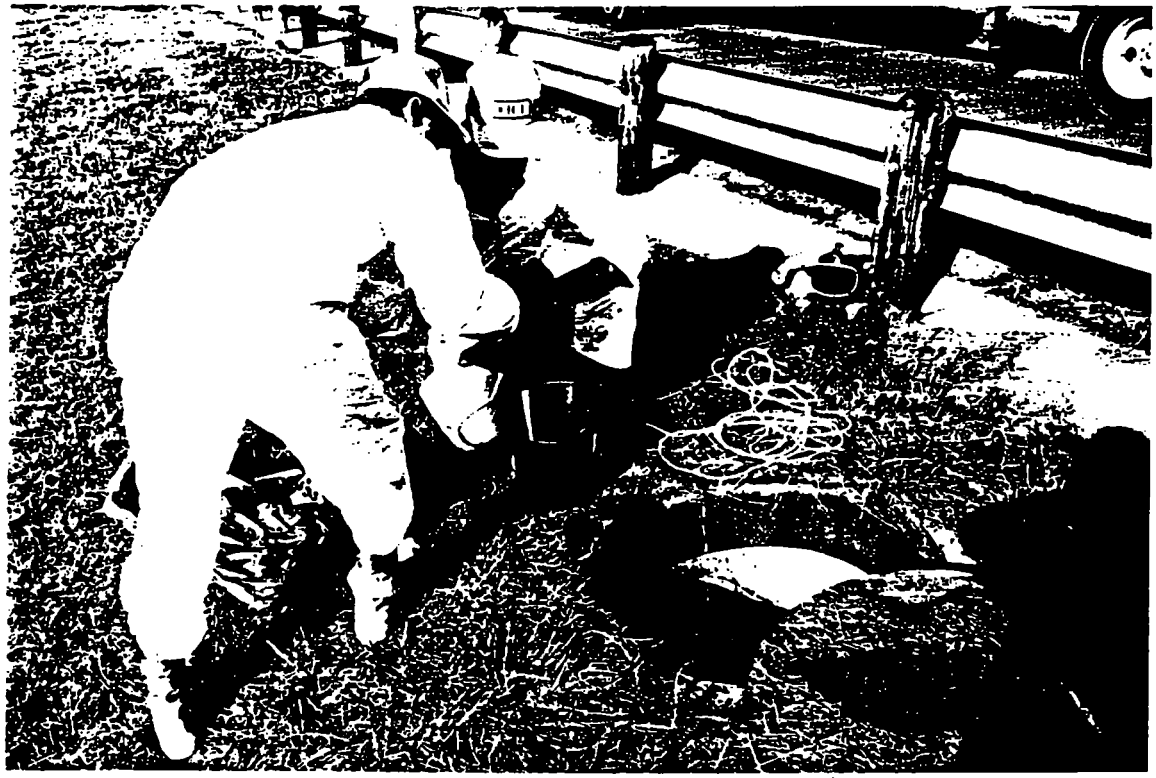
Date: November 16, 1988

Time: 0915

Direction: Northwest

Comments: Sample location 10, collection was completed.

(This photograph matches negative number 14)



Photograph Number 16

Site Name: Goodson & Son Trucking

Location: Channelview, TX

Photographer: Derrick Johnson

Date: November 16, 1988

Direction: North

CERCLIS: TXD981052475

TDD Number: F-6-8809-29

Witness: Steve Cowan

Time: 0936

Comments: Sample location 06, note the oily sheen in the north drainage ditch.

(This photograph matches negative number 15)

Photograph Number 17

Site Name: Goodson & Son Trucking

Location: Channelview, TX

Photographer: Derrick Johnson

Date: November 16, 1988

Direction: North

CERCLIS: TXD981052475

TDD Number: F-6-8809-29

Witness: Steve Cowan

Time: 0939

Comments: Sample location 02, sample from the south side of the north ditch.

(This photograph matches negative number 16)

Photograph Number 18

Site Name: Goodson & Son Trucking

CERCLIS: TXD981052475

Location: Channelview, TX

TDD Number: F-6-8809-29

Photographer: Derrick Johnson

Witness: Steve Cowan

Date: November 16, 1988

Time: 0943

Direction: North

Comments: Sample location 06, collection of water sample from the north ditch.

(This photograph matches negative number 17)

Photograph Number 19

Site Name: Goodson & Son Trucking

CERCLIS: TXD981052475

Location: Channelview, TX

TDD Number: F-6-8809-29

Photographer: Derrick Johnson

Witness: Steve Cowan

Date: November 16, 1988

Time: 0945

Direction: North

Comments: Sample location 06, to provide a homogenous water sample the water was poured from one stainless steel bucket to another.

(This photograph matches negative number 18)

Photograph Number 20

Site Name: Goodson & Son Trucking

CERCLIS: TXD981052475

Location: Channelview, TX

TDD Number: F-6-8809-29

Photographer: Derrick Johnson

Witness: Steve Cowan

Date: November 16, 1988

Time: 0954

Direction: North

Comments: Sample location 06, filling bottles for the sample. QA/QC volume was taken for this sample.

(This photograph matches negative number 19)

Photograph Number 21

Site Name: Goodson & Son Trucking

Location: Channelview, TX

Photographer: Terry Pierce

Date: November 16, 1988

Direction: South-southwest

CERCLIS: TXD981052475

TDD Number: F-6-8809-29

Witness: Steve Cowan

Time: 1103

Comments: Sample location 15, soil from the east end of the north ditch.

(This photograph matches negative number 20)

Photograph Number 22

Site Name: Goodson & Son Trucking

CERCLIS: TXD981052475

Location: Channelview, TX

TDD Number: F-6-8809-29

Photographer: Terry Pierce

Witness: Steve Cowan

Date: November 16, 1988

Time: 1107

Direction: South-southwest

Comments: Sample location 13, water from the east end of the north ditch.

(This photograph matches negative number 21)

Photograph Number 23

Site Name: Goodson & Son Trucking

Location: Channelview, TX

Photographer: Victor Cason

Date: November 16, 1988

Direction: North

CERCLIS: TXD981052475

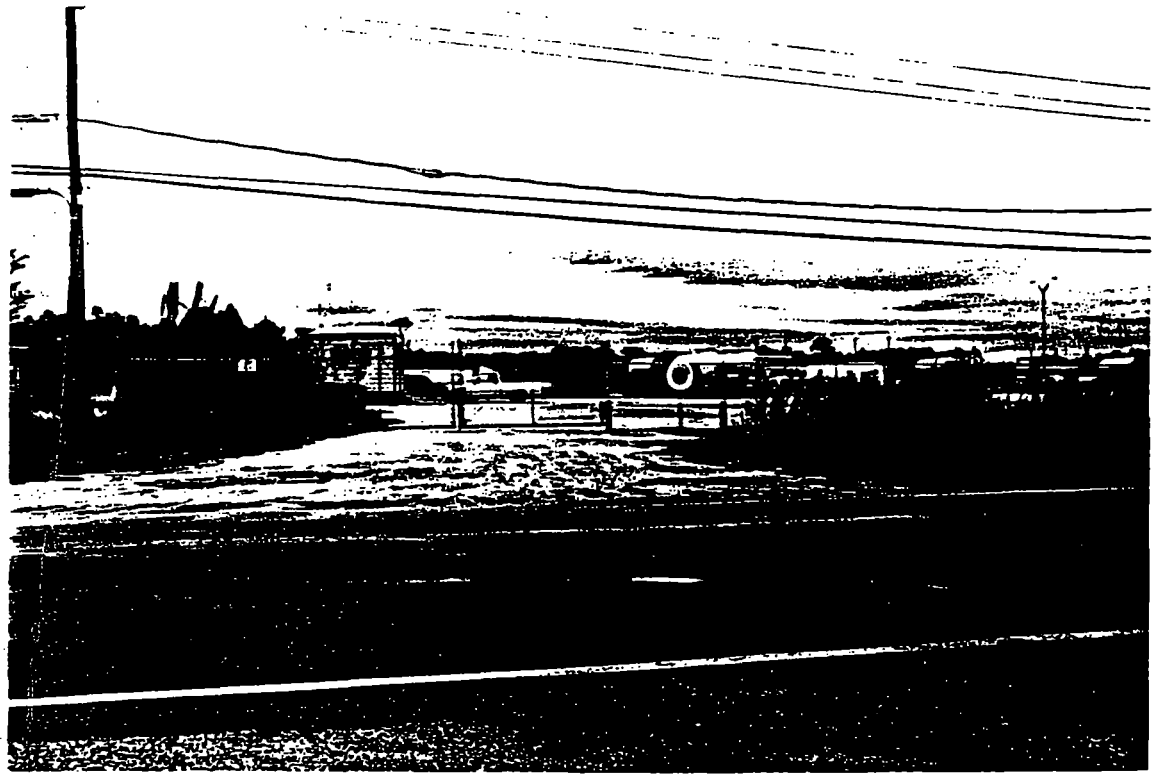
TDD Number: F-6-8809-29

Witness: Steve Cowan

Time: 1141

Comments: A view of the office on the west end of the site.

(This photograph matches negative number 22)



Photograph Number 24

Site Name: Goodson & Son Trucking

Location: Channelview, TX

Photographer: Victor Cason

Date: November 16, 1988

Direction: Northeast

CERCLIS: TXD981052475

TDD Number: F-6-8809-29

Witness: Steve Cowan

Time: 1143

Comments: A view of the entrance on the southwest end of the site

(This photograph matches negative number 23)

Photograph Number 25

Site Name: Goodson & Son Trucking

Location: Channelview, TX

Photographer: Victor Cason

Date: November 16, 1988

Direction: East

CERCLIS: TXD981052475

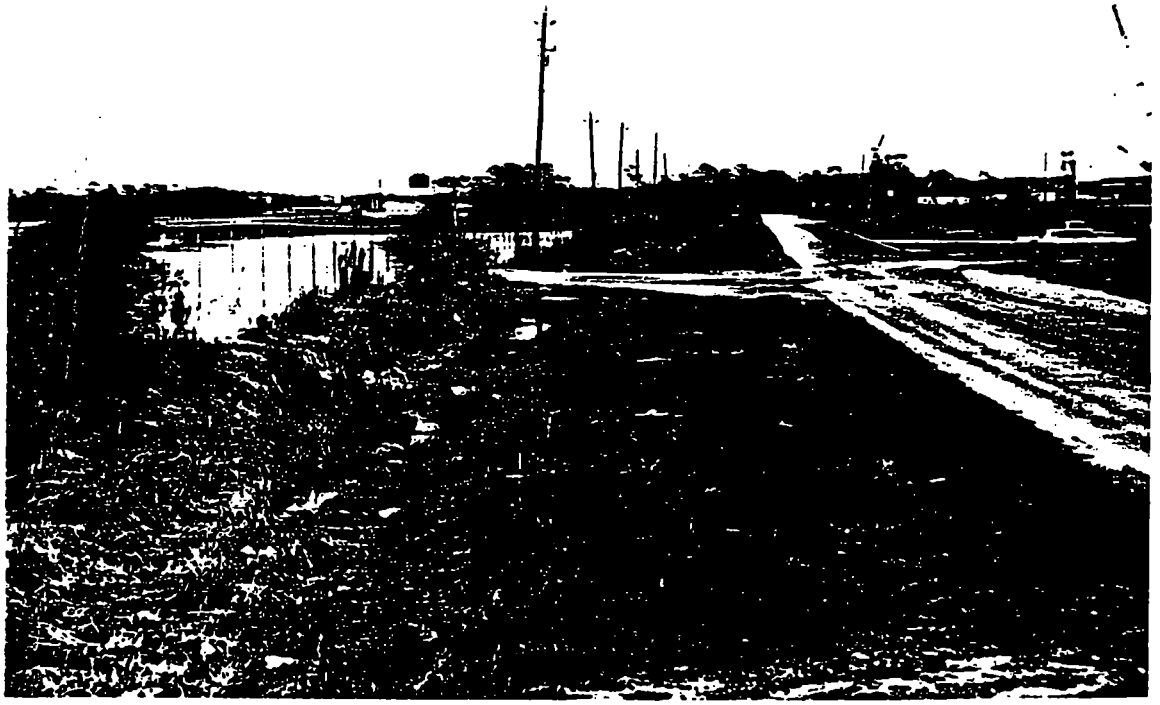
TDD Number: F-6-8809-29

Witness: Steve Cowan

Time: 1145

Comments: A view of the south ditch.

(This photograph matches negative number 24)



Dangerous Properties of Industrial Materials

Sixth Edition

N. IRVING SAX

Assisted by:

Benjamin Feiner/Joseph J. Fitzgerald/Thomas J. Haley/Elizabeth K. Weisburger

VNR VAN NOSTRAND REINHOLD COMPANY
New York

TOXICITY DATA:	1	CODEN:
orl-rat LD50:17 gm/kg		AIHAAP 23,95,62
skn-rbt LD50:7940 mg/kg		AIHAAP 23,95,62

Reported in EPA TSCA Inventory, 1980.
THR: LOW orl, skn.
Disaster Hazard: When heated to decomp it emits acrid smoke and irr fumes.

BIS(2-ETHYLHEXYL)MALEATE

CAS RN: 142165 NIOSH #: ON 0160000
mf: $C_{20}H_{36}O_4$; mw: 340.56

Liquid. mp: −60°, bp: 164° @ 10 mm, flash p: 365°F, d: 0.9436 @ 20°/20°, vap. d: 11.7.

SYNS:
DI-(2-ETHYLHEXYL)MALEATE "DIOCTYL" MALEATE

TOXICITY DATA:	1	CODEN:
skn-rbt 10 mg/24H MLD		JIHTAB 31,60,49
eye-rbt 500 mg		JIHTAB 31,60,49
orl-rat LD50:14 gm/kg		JIHTAB 31,60,49
skn-rbt LD50:15 gm/kg		JIHTAB 31,60,49

Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.
THR: LOW orl, skn. A skn, eye irr. See also esters.
Fire Hazard: Slight, when exposed to heat or flame; can react with oxidizing materials.
To Fight Fire: Alcohol foam, dry chemical, mist or spray.
Disaster Hazard: When heated to decomp it emits acrid smoke and irr fumes.

BIS((2-(ETHYL)HEXYLOXY)MALEOYLOXY)DI(n-BUTYL)STANNANE

NIOSH #: WH 6717000
mf: $C_{32}H_{56}O_8Sn$; mw: 687.57

SYN: 2-ETHYLHEXYLMALEINAN DI-N-BUTYLCINICITY (CZECH)

TOXICITY DATA:	3	CODEN:
skn-rbt 500 mg/24H MOD		28ZPAK -,230,72
eye-rbt 100 mg/24H SEV		28ZPAK -,230,72
orl-rat LD50:284 mg/kg		28ZPAK -,230,72

Occupational Exposure to Organotin Compounds recm std: Air: TWA 0.1 mg(Sn)/m3 NTIS**.
THR: HIGH orl. A skn, eye irr. See also tin compounds.
Disaster Hazard: When heated to decomp it emits acrid smoke and irr fumes.

BIS(2-ETHYLHEXYL)AZELATE

CAS RN: 103242 NIOSH #: CM 2000000
mf: $C_{25}H_{48}O_4$; mw: 412.73

SYNS:
AZELAIC ACID, DI(2-ETHYLHEXYL)ESTER DIOCTYL AZELATE

TOXICITY DATA:	2	CODEN:
skn-rbt 10 mg/24H open MLD		AIHAAP 23,95,62
ivn-rat LD50:1060 mg/kg		MRLR** No.256,54
ivn-rbt LD50:640 mg/kg		MRLR** No.256,54

Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.
THR: MOD ivn; A skn irr. See also esters.
Disaster Hazard: When heated to decomp it emits acrid smoke and irr fumes.

BIS(2-ETHYLHEXYL)PHOSPHATE

CAS RN: 298077 NIOSH #: TB 7875000
mf: $C_{16}H_{35}O_4P$; mw: 322.48

SYNS:
BIS(2-ETHYLHEXYL)HYDROGEN PHOSPHATE
BIS(2-ETHYLHEXYL)ORTHOPHOSPHORIC ACID
BIS(2-ETHYLHEXYL)PHOSPHORIC ACID
DI(2-ETHYLHEXYL)PHOSPHATE
2-ETHYL-1-HEXANOL HYDROGEN PHOSPHATE

TOXICITY DATA:	3-2-1	CODEN:
skn-rbt 500 mg open MOD		UCDS** 5/18/72
eye-rbt 5 mg MOD		UCDS** 5/18/72
orl-rat LD50:4940 mg/kg		UCDS** 5/18/42
ipr-mus LDLo:63 mg/kg		CBCCT* 9,132,57
skn-rbt LD50:1250 mg/kg		UCDS** 5/18/72

DOT: Corrosive Material, Label: Corrosive FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980.
THR: HIGH ipr; MOD skn; LOW orl. MOD skn, eye irr.
Disaster Hazard: When heated to decomp it emits tox fumes of PO_x.

BIS(2-ETHYLHEXYL)PHTHALATE

CAS RN: 117817 NIOSH #: TI 0350000
mf: $C_{24}H_{38}O_4$; mw: 390.62

SYNS:
BIS(2-ETHYLHEXYL)-1,2-BENZENEDICARBOXYLATE
DI(2-ETHYLHEXYL)ORTHOPHTHALATE
DI(2-ETHYLHEXYL)PHTHALATE
DI-SEC-OCTYL PHTHALATE
DOP
2-ETHYLHEXYL PHTHALATE
NCI-C52733
OCTOIL

TOXICITY DATA:	3-2-1	CODEN:
skn-rbt 500 mg/24H MLD		28ZPAK -,48,72
eye-rbt 500 mg		AJOPAA 29,1363,46
eye-rbt 500 mg/24H MLD		28ZPAK -,48,72
ipr-rat TDLo:30 gm/kg/(5-15D preg):TER		JPMSAE 61,51,72
orl-mus TDLo:7500 mg/kg/(8D preg):TER		TJADAB 14,259,76
orl-man TDLo:143 mg/kg:GIT		JIHTAB 27,130,45
orl-rat LD50:31 gm/kg		UCDS** 7/20/67
ipr-rat LD50:30700 mg/kg		JIHTAB 27,130,45
ivn-rat LD50:250 mg/kg		TXAPA9 45,230,78
unk-rat LD50:37000 mg/kg		GTPZAB 24(3),25,80
orl-mus LD50:30 gm/kg		TJADAB 14,259,76
ipr-mus LD50:14 gm/kg		JPMSAE 55,158,66
unk-mus LD50:37000 mg/kg		GTPZAB 24(3),25,80
orl-rbt LD50:34 gm/kg		EVHPAZ 4,3,73
skn-rbt LD50:25 gm/kg		JIHTAB 27,130,45
skn-gpg LD50:10 gm/kg		EVHPAZ 4,3,73
unk-gpg LD50:37000 mg/kg		GTPZAB 24(3),25,80
ihl-mam LC50:30000 mg/m3		GTPZAB 24(3),25,80
orl-rat TDLo:35 mg/kg (14D male/14D pre)		FCTXAV 15,389,77

orl-rat TDLo:8400 ug/kg (7D male)	TXAPA9 53,35,80
orl-rat TDLo:17200 mg/kg (MGN)	NEZAAQ 31,507,76
orl-rat TDLo:43 gm/kg (MGN)	NEZAAQ 31,507,76
ipr-rat TDLo:10 gm/kg (5-15D preg)	JPMSAE 61,51,72
ipr-rat TDLo:5 gm/kg (5-15D preg)	JPMSAE 61,51,72
orl-mus TDLo:1 gm/kg (7D preg)	JEPTDQ 4,533,80
orl-mus TDLo:1260 mg/kg (1-18D preg)	ENVRAL 22,245,80
orl-mus TDLo:3420 mg/kg (1-18D preg)	ENVRAL 22,245,80
orl-mus TDLo:7200 mg/kg (1-18D preg)	ENVRAL 22,245,80

TLV: Air: 5 mg/m3 DTLVS* 4,159,80. *Toxicology Review:* EVHPAZ (3),73,73; RREVAH 54,1,75; JOCMA7 15(10),808,73; CMIVAS 10(3),49,73; ESKHA5 93,1,75; TXAPA9 45,1,78. OSHA Standard: Air: TWA 5 mg/m3 (SCP-D) FEREAC 39,23540,74. NTP Carcinogenesis Bioassay Completed as of December 1980. "NIOSH Manual of Analytical Methods" Vol 1 S40. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.

THR: An exper TER, GIT (man). Possible hmn CARC. HIGH ivn; LOW orl, ipr, unk, skn; MLD skn, eye irr.

Disaster Hazard: When heated to decomp it emits acrid smoke.

For further information see Di-(2-Ethylhexyl)Phthalate, Vol. 1, No. 7 and Vol. 2, No. 2 of *DPIM Report.*

BIS(2-ETHYLHEXYL)SEBACATE

CAS RN: 122623 NIOSH #: VS 1000000
mf: $C_{26}H_{50}O_4$; mw: 426.76

Light, clear liquid, mild odor. bp: 248° @ 9 mm, fp: −55°, flash p: 410°F, d: 0.913 @ 25°/25°, vap. d: 14.7.

SYNS:

DECANEDIOIC ACID, BIS(2-ETHYLHEXYL) ESTER
DI(2-ETHYLHEXYL)SEBACATE
DIOCTYL SEBACATE
2-ETHYLHEXYL SEBACATE
OCTYL SEBACATE

TOXICITY DATA: 2

orl-rat LD50:1280 mg/kg	14CYAT 2,1883,63
ivn-rat LD50:900 mg/kg	MRLR** No.256,54
ivn-rbt LD50:540 mg/kg	MRLR** No.256,54

Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.

THR: MOD orl, ivn. See also esters.

Fire Hazard: Slight, when exposed to heat or flame; can react with oxidizing materials.

To Fight Fire: Foam, CO_2, dry chemical.

Disaster Hazard: When heated to decomp it emits acrid smoke and irr fumes.

BIS(2-ETHYLHEXYL)SEBACATE and 2,6-DI-t-BUTYL-p-CRESOL

NIOSH #: VS 1010000

SYNS:

SEBACIC ACID, BIS(2-ETHYLHEXYL) ESTER MIXED WITH 2,6-DI-T-BUTYL-P-CRESOL (99.5%:0.5% BY WT)
2,6-DI-T-BUTYL-P-CRESOL MIXED WITH BIS(2-ETHYLHEXYL) SEBACATE

TOXICITY DATA: 2

ivn-rat LD50:900 mg/kg	MRLR** No.256,54
ivn-rbt LD50:760 mg/kg	MRLR** No.256,54

THR: MOD ivn. See also esters.

Disaster Hazard: When heated to decomp it emits acrid smoke and irr fumes.

BIS(2-ETHYLHEXYL)SEBACATE and PHENOTHIAZINE

NIOSH #: VS 1020000

SYNS:

SEBACIC ACID, BIS(2-ETHYLHEXYL)ESTER MIXED WITH PHENOTHIAZINE (99.5%:0.5% BY WT)
PHENOTHIAZINE MIXED WITH BIS(2-ETHYLHEXYL)SEBACATE

TOXICITY DATA: 2

ivn-rat LD50:900 mg/kg	MRLR** No.256,54
ivn-rbt LD50:1060 mg/kg	MRLR** No.256,54

THR: MOD ivn. See also esters.

Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and SO_x.

BIS(2-ETHYLHEXYL)SEBACATE and TRICRESYL PHOSPHATE

NIOSH #: VS 1030000

SYNS:

SEBACIC ACID, BIS(2-ETHYLHEXYL)ESTER MIXED WITH TRICRESYL PHOSPHATE (95%:5% BY WT)
TRICRESYL PHOSPHATE MIXED WITH BIS(2-ETHYLHEXYL) SEBACATE

TOXICITY DATA: 2

ivn-rat LD50:1490 mg/kg	MRLR** No.256,54
ivn-rbt LD50:900 mg/kg	MRLR** No.256,54

THR: MOD ivn. See also esters.

Disaster Hazard: When heated to decomp it emits tox fumes of PO_x.

BIS(ETHYLMERCURI)PHOSPHATE

CAS RN: 2440451 NIOSH #: OW 4375000
mf: $C_4H_{11}Hg_2O_4P$; mw: 555.30

Solid

SYNS:

ETHYLMERCURIC PHOSPHATE
ETHYLMERCURY PHOSPHATE
LIGNASAN FUNGICIDE

TOXICITY DATA: 3

scu-mus TDLo:40 mg/kg (10D preg)	NISFAY 20,1479,68
orl-rat LD50:30 mg/kg	PCOC** -,516,66
unk-rat LD50:30 mg/kg	30ZDA9 -,288,71
orl-mus LD50:61 mg/kg	KUMJAX 14,65,61
scu-mus LD50:63 mg/kg	KUMJAX 14,65,61

ivn-dog LDLo:4 mg/kg	HBAMAK 4,1335,35
orl-cat LDLo:100 mg/kg	HBAMAK 4,1335,35
ipr-cat LDLo:180 mg/kg	HBAMAK 4,1335,35
scu-cat LDLo:150 mg/kg	HBAMAK 4,1335,35
ivn-cat LDLo:80 mg/kg	HBAMAK 4,1335,35
orl-rbt LDLo:355 mg/kg	JPETAB 1,572,10
ipr-rbt LDLo:150 mg/kg	HBAMAK 4,1335,35
scu-rbt LDLo:275 mg/kg	JPETAB 1,572,10
ivn-rbt LDLo:80 mg/kg	HBAMAK 4,1335,35
ims-rbt LDLo:200 mg/kg	JPETAB 1,572,10
orl-gpg LDLo:280 mg/kg	HBAMAK 4,1335,35
ipr-gpg LDLo:220 mg/kg	HBAMAK 4,1335,35
scu-gpg LDLo:200 mg/kg	HBAMAK 4,1335,35
orl-ham LD50:239 mg/kg	TXAPA9 37,93,76
scu-pgn LDLo:140 mg/kg	JPETAB 1,572,10
scu-frg LDLo:120 mg/kg	APTOA6 15,331,59
par-frg LDLo:800 mg/kg	AEPPAE 166,437,32

Toxicology Review: JIMRBV 2,359,74; 31ZNAA 3(3),345,75; JRPMAP 12(1),27,74; CLPTAT 5,480,64; 32XPAD -,49,75; ADVPA3 4,263,66; FNSCA6 2, 67,73. Selected by NTP Carcinogensis Bioassay as of December 1980. Reported in EPA TSCA Inventory, 1980.

THR: MUT data. An exper TER. A hmn CNS, IRR. HIGH hmn ivn, orl. HIGH orl, ipr, scu, ivn, ims. MOD par, scu, orl. Implicated in increased fetal losses. An exper carc. A general purpose food additive. Large doses (above 1.0 g) cause palpitation, excitement, insomnia, dizziness, headache and vomiting. Continued excessive use of caffeine in tea or coffee may lead to digestive disturbances, constipation, palpitations, shortness of breath and depressed mental states. It is also implicated in cardiac disorders under those conditions.

Treatment and Antidotes: Evacuate stomach with emetic or stomach tube. Call a physician.

Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

For further information see Vol. 1, No. 1 of *DPIM Report.*

CAFFEINE HYDROBROMIDE

CAS RN: 5743180 NIOSH #: EV 6599500
mf: $C_8H_{10}N_4O_2 \cdot BrH$; mw: 275.14

SYNS:

CAFFEINE BROMIDE
3,7-DIHYDRO-1,3,7-TRIMETHYL-1H-PURINE-2,6-DIONE, MONOHYDROBROMIDE

TOXICITY DATA: 3 CODEN:

orl-rbt LDLo:400 mg/kg	HBAMAK 4,1289,35
scu-rbt LDLo:150 mg/kg	HBAMAK 4,1289,35
ivn-rbt LDLo:100 mg/kg	HBAMAK 4,1289,35

THR: HIGH orl, scu, ivn. See also caffeine and bromides.

Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and HBr.

CAJEPUTOL

CAS RN: 470826 NIOSH #: OS 9275000
mf: $C_{10}H_{18}O$; mw: 154.28

SYNS:

1,8-CINEOLE
1,8-EPOXY-P-MENTHANE
EUCALYPTOL
LIMONENE OXIDE
NCI-C56575
1,8-OXIDO-P-MENTHANE

TOXICITY DATA: 3 CODEN:

ipr-mus TDLo:2400 mg/kg/8W-I:ETA	CNREA8 33,3069,73
orl-rat LD50:2480 mg/kg	FCTXAV 2,327,64
scu-mus LDLo:50 mg/kg	TFAKA4 1,134,55
ims-mus LD50:100 mg/kg	JSICAZ 21,342,62
scu-dog LDLo:1500 mg/kg	TFAKA4 1,134,55
ims-gpg LDLo:2250 mg/kg	TFAKA4 1,134,55

Toxicology Review: 27ZTAP 3,69,69. Selected by NTP Carcinogenesis Bioassay as of December 1980. Reported in EPA TSCA Inventory, 1980.

THR: HIGH scu, ims. An exper ETA. MOD orl, scu, ims.

Disaster Hazard: When heated to decomp it emits acrid smoke.

CALCIUM

CAS RN: 7440702 NIOSH #: EV 8040000
af: Ca; aw: 40.08

Silver-white, soft metal. mp: 842°, bp: 1484°, d: 1.54 @ 20°, vap. press: 10 mm @ 983°.

SYNS:

CALCIUM, METAL, CRYSTALLINE (DOT)
CALCIUM, METAL (DOT)

TOXICITY DATA:

DOT: Flammable Solid, Label: Flammable Solid and Dangerous When Wet FEREAC 41,57018,76. "NIOSH Manual of Analytical Methods" VOL 5 173#. Reported in EPA TSCA Inventory, 1980.

THR: See calcium compounds.

Fire Hazard: Mod, when heated or in intimate contact with moisture or acids, evolves hydrogen. See also hydrogen.

Explosion Hazard: Mod, in intimate contact with very powerful oxidizing agents; i.e., Cl_2, ClF_3, F_2, O_2, Si, S, and V_2O_3.

Disaster Hazard: Dangerous; reacts with moisture or acids to liberate large quantities of hydrogen; can develop explosive pressure in containers. See also hydrogen.

To Fight Fire: Special mixtures of dry chemical.

Incomp: Air; asbestos cement; halogens; lead dichloride; phosphorus (V) oxide; silicon; sodium, mixed oxides; sulfur; water.

CALCIUM ACETARSONE

CAS RN: 64046964 NIOSH #: CF 8575000
mf: $C_8H_{10}AsNO_5 \cdot xCa$; mw: 555.67

SYN: N-ACETYL-4-HYDROXY-M-ARSANILIC ACID CALCIUM SALT

TOXICITY DATA: 3 CODEN:

orl-cat LDLo:135 mg/kg	PSEBAA 27,267,30

OSHA Standard: Air: TWA 500 ug(As)/m3 FEREAC 39,23540,74.

THR: HIGH orl. See also arsenic compounds.

Disaster Hazard: When heated to decomp it emits very tox fumes of As and NO_x.

TOXICITY DATA: 2	CODEN:
ihl-rat LCLo:520 mg/m3/4H	HYSAAV 31,383,66
unk-rat LDLo:452 mg/kg	HYSAAV 31,383,66
unk-mus LDLo:580 mg/kg	HYSAAV 31,383,66

THR: MOD ihl, unk. See also esters.

Disaster Hazard: When heated to decomp it emits tox fumes of Cl^-.

DDT

CAS RN: 50293 NIOSH #: KJ 3325000

mf: $C_{14}H_9Cl_5$; mw: 354.48

Colorless crystals or white to slightly off-white powder. Odorless or with slight aromatic odor. mp: 108.5°-109°.

SYNS:

ALPHA,ALPHA-BIS(P-CHLORO-PHENYL)-BETA,BETA,BETA-TRICHLORETHANE	ENT 1,506
	NCI-C00464
	1,1,1-TRICHLOOR-2,2-BIS(4-CHLOOR FENYL)-ETHAAN (DUTCH)
2,2-BIS(P-CHLOROPHENYL)-1,1,1-TRICHLOROETHANE	
CHLOROPHENOTHANE	1,1,1-TRICHLOR-2,2-BIS(4-CHLOR-PHENYL)-AETHAN (GERMAN)
P,P'-DDT	
P,P'-DICHLORODIPHENYLTRI-CHLOROETHANE	1,1,1-TRICHLORO-2,2-DI(4-CHLO-ROPHENYL)-ETHANE
4,4'-DICHLORODIPHENYLTRI-CHLOROETHANE	1,1,1-TRICLORO-2,2-BIS(4-CLORO-FENIL)-ETANO (ITAL-IAN)
DIPHENYLTRICHLOROETHANE	

TOXICITY DATA: 3	CODEN:
cyt-hmn:lym 200 ug/1/72H	MUREAV 40,131,76
dlt-rat-orl 100 mg/kg	FCTXAV 11,53,73
spm-rat-orl 1 gm/kg/2D-I	BECTA6 14,171,75
cyt-mus-ipr 50 ppm	CNJGA8 16,491,74
cyt-mus-unk 50 mg/kg	PHTHDT 6,147,79
dlt-mus-orl 100 mg/kg	PHTHDT 6,147,79
dlt-mus-unk 200 mg/kg/10W-I	PHTHDT 6,147,79
orl-rat TDLo:19 gm/kg/2Y-C:NEO	IJCNAW 19,179,77
orl-mus TDLo:73 mg/kg/26W-C:CAR	FCTXAV 7,215,69
scu-mus TDLo:370 mg/kg/80W-I:NEO	IJCNAW 19,725,77
orl-mus TD:11 gm/kg/78W-C:ETA	NCITR* NCI-CG-TR-131,78
orl-mus TD:7560 mg/kg/90W-C:NEO	FCTXAV 11,433,73
orl-mus TD:5600 mg/kg/80W-I:NEO	IJCNAW 19,725,77
orl-rat TD:8100 mg/kg/2Y-C:ETA	TXAPA9 11,88,67
orl-inf LDLo:150 mg/kg	BMJOAE 2,845,45
orl-hmn TDLo:6 mg/kg:CNS	DTLVS* 3,68,71
unk-man LDLo:221 mg/kg	85DCAI 2,73,70
orl-rat LD50:113 mg/kg	TXAPA9 2,88,60
skn-rat LD50:1931 mg/kg	SPEADM 74-1,-,74
ipr-rat LD50:74 mg/kg	ANTBAL 14,316,69
scu-rat LD50:1500 mg/kg	BMJOAE 1,865,45
ivn-rat LDLo:30 mg/kg	JPETAB 86,213,46
ivn-rat LD50:68 mg/kg	ANTBAL 14,316,69
orl-mus LD50:135 mg/kg	FEPRA7 12,368,53
ipr-mus LD50:77 mg/kg	ANTBAL 14,316,69
ivn-mus LD50:68500 ug/kg	ANTBAL 14,316,69
orl-dog LDLo:300 mg/kg	MEMOAQ 4,25,50
ivn-dog LDLo:75 mg/kg	JPETAB 86,213,46
orl-mky LD50:200 mg/kg	AVPCAQ 12,31,75
ivn-mky LDLo:50 mg/kg	JPETAB 86,213,46
orl-cat LDLo:250 mg/kg	JPETAB 86,213,46
ivn-cat LDLo:40 mg/kg	JPETAB 86,213,46
orl-rbt LD50:250 mg/kg	PCOC** -,347,66
skn-rbt LD50:300 mg/kg	BMJOAE 1,865,45
scu-rbt LD50:250 mg/kg	BMJOAE 1,865,45
ivn-rbt LDLo:50 mg/kg	JPETAB 86,213,46
orl-gpg LD50:150 mg/kg	JETOAS 7,159,74
skn-gpg LD50:1000 mg/kg	BMJOAE 1,865,45
scu-gpg LD50:900 mg/kg	BMJOAE 1,865,45
orl-ckn LDLo:300 mg/kg	MEMOAQ 4,25,50
orl-frg LD50:7600 ug/kg	ENVPAF 20,45,79
scu-frg LD50:35 mg/kg	AIPTAK 74,343,47
orl-dom LDLo:300 mg/kg	MEMOAQ 4,25,50
dlt-oln-orl 200 ppm	ETEAAT 12,221,69
cyt-hmn:lym 200 ug/L/72H	MUREAV 40,131,76
cyt-rat:oth 10 ug/L	34LXAP -,555,76
orl-rat TDLo:390 mg/kg (1-20D preg)	GISAAA 45(6),14,80
ipr-rat TDLo:60 mg/kg (3D pre)	TXAPA9 18,348,71
scu-mus TDLo:418 mg/kg (6-14D preg)	NTIS** PB223-160
unk-mus TDLo:3 mg/kg (10-17D preg)	TXAPA9 22,327,72
orl-dog TDLo:3540 mg/kg (MGN)	AECTCV 6,83,77
orl-rbt TDLo:150 mg/kg (7-9D preg)	AIPTAK 192,286,71
orl-mus TDLo:3408 mg/kg (MGN) TFX:NEO	IJCNAW 11,688,73

Aquatic Toxicity Rating: TLm96:under 1 ppm WQCHM* 2,-,74. Carcinogenic Determination: Animal Suspected IARC** 5,83,74. *TLV:* Air: 1 mg/m3 DTLVS* 4,117,80; *Toxicology Review:* JSIRAC 34,462,75; AABIAV 35,505,48; ATXKA8 29,1,72; ADCSAJ 1,160,50; ENVRAL 7(2),243,74; RREVAH 48,141,73; RREVAH 59,119,75; ADCSAJ 1,160,50; RREVAH 61,37,75; NOALA4 41(217),271,75; MZUZA8 (8),90,73; CNDQA8 10(3),43,75; ECMAAI 14(3),141,73; DTTIAF 80(20),485,73; RREVAH 56,107,75; AJDDAL 20,331,53; AJMEAZ 38,409,65; ETOXAC 7,1,76; IRGGAJ 24,193,68; BISNAS 20,958,70; 85CVA2 5,250,70; PTPAD4 7,513,79; CTOXAO 13,231,78; EESADV 1,89,77; EESADV 1,503,78; BNYMAM 54,413,78; 27ZTAP 3,45,69. OSHA Standard: Air: TWA 1 mg/m3 (skin) (SCP-S) FEREAC 39,23540,74. DOT: ORM-A, Label: None FEREAC 41,57018,76. NCI Carcinogenesis Bioassay Completed; Results Negative (NCITR* NCI-CG-TR-131,78). "NIOSH Manual of Analytical Methods" VOL 3 S274. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.

THR: HIGH via oral and dermal routes. Used as a food additive permitted in the food and drinking water of animals and/or for the treatment of food-producing animals. Also a food additive permitted in food for human consumption. *Note:* DDT is a common air contaminant.

DDT is readily absorbed from the intestinal tract and, if it occurs in the air in the form of an aerosol or dust, it may be taken into the lung and readily absorbed. DDT is not, however, absorbed from the skin unless it is in solution. Solutions are absorbed from the skin and, by the same token, emulsions are absorbed to some extent. Likewise, fats and oils from whatever source increase the absorption of DDT from the intestine. DDT acts on the CNS, but the exact mechanism of this action either in man or in animals has not been elucidated. DDT is an exper MUT, CARC, ETA, NEO. See chlorinated hydrocarbons. Large doses of DDT also induce nausea and/or diarrhea in man; how-

ever, whether this is a central or local action is not yet clear. Chronically, DDT produces microscopic changes in the liver and kidneys in some exper animals. This has not been demonstrated in man. DDT is secreted in the milk and, as an acid derivative is excreted in the urine of rabbits, dogs and man. DDT and certain of its degradation products, particularly DDE, are stored in fat. Such storage results either from a single large dose or from repeated small doses. DDT stored in the fat is at least largely inactive since a greater total dose may be stored in an exper animal than is sufficient as a lethal dose for that same animal if given at one time. A study based on 75 human cases reported an average of 5.3 ppm of DDT stored in the fat. A higher content of DDT and its derivatives (up to 434 ppm of DDE and 648 ppm of DDT) was found in workers who had very extensive exposure. Without exception, the samples were taken from persons who were either asymptomatic or suffering from some disease completely unrelated to DDT. Careful hospital examination of workers, who had been very extensively exposed and who had volunteered for examination revealed no abnormality which could be attributed to DDT. Much higher levels than have been found in man have been observed in the fat of exper animals which were apparently asymptomatic. DDT stored in the fat is eliminated only very gradually when further dosage is discontinued. After a single dose, the secretion of DDT in the milk and its excretion in the urine reach their height within a day or two and continue at a lower level thereafter.

Dangerous Acute Dose in Man: A dose of 20 g has proved highly dangerous though not fatal to man. This dose was taken by 5 persons who vomited an unknown portion of the material and even so recovered only incompletely after 5 weeks. Smaller doses produced less important symptoms with relatively rapid recovery. Exper ingestion of 1.5 g resulted in great discomfort and moderate neurological changes including paraesthesia, tremor, moderate ataxia, exaggeration of part of the reflexes, headache, and fatigue. Vomiting followed only after 11 hours. Recovery was complete on the following day. The fatal dose of DDT for man is not known. Judging from the literature, no one has ever been killed by DDT in the absence of other insecticides and/or a variety of toxic solvents. However, these common solvent formulations are highly fatal when taken in small doses, partly because of the toxicity of the solvent, and perhaps because of the increased absorbability of the DDT; several fatal cases in man have been reported. Acute oral toxicity for man = 250 mg/kg. Acute oral LD_{50} (rat) = 113 mg/kg (tech grade). Federal fruit and vegetable tolerance = 7 ppm.

Dangerous Chronic Dose in Man: Even less is known of the hazard of chronic DDT poisoning. It is known that certain exper animals fed diets containing one part of DDT per million store the compound in their fat. The storage of DDT in man has been mentioned above. The exact significance of these findings is not known and their further investigation is of the greatest importance. Human volunteers have ingested up to 35 mg/day for 21 months with no ill effects.

Signs and Symptoms of Poisoning in Man: In patients who ate substantial doses of DDT in flour, the symptoms observed were vomiting, numbness and partial paralysis of the extremities, mild convulsions, loss of proprioception and vibratory sensation of the extremities, and hyperactive knee jerk reflexes. Symptoms appeared in 30 to 60 min after eating the DDT. The paralysis and numbness were most evident in the most distal portions of the extremities, and their intensity was directly proportional to the amount of DDT ingested. All the patients were apprehensive and excited; respiration was moderately rapid; pulse remained slow to normal. The immediate protective mechanism in man, following substantial doses, is vomiting. With smaller doses, nausea and vomiting are less prominent, but diarrhea has been observed. Signs and symptoms of chronic poisoning in man are unknown, although, judging from the observed microscopic changes in exper animals, liver and kidney dysfunctions should be looked for. The primary irr of DDT is practically nil, and it has little or no tendency to produce allergy. Dermatitis induced by DDT has occasionally been reported, but these reports are unconfirmed; nevertheless the phenomenon should be expected to occur in rare instances.

Laboratory Findings: Laboratory findings are essentially negative except for the presence of DDT which may be quantitatively measured in stomach contents, urine, or tissues.

Treatment of Poisoning: Depending on the condition of the patient, attention should first be given to the sedation or to the removal of poison which may have been taken internally. Stomach lavage and saline laxatives may be used. Oil laxatives should be avoided; they promote absorption of DDT and of many organic solvents. The five drugs of choice, arranged roughly in order of their effectiveness, are phenobarbital, pentobarbital, paraldehyde, urethane, and calcium gluconate. Phenobarbital, which has been used in doses up to 0.7 g per day in epilepsy, and pentobarbital (0.25 to 0.5 g) are the barbiturates known to control convulsions of central origin. Paraldehyde (average dosage 15 cc orally, 1 cc undiluted intravenously, 35 cc rectally in normal saline) controls the convulsions of DDT-poisoned animals. Urethane (human dosage 1 to 4 g) has proved very effective in rats, but it should be remembered that the hypnotic and narcotic effects of urethane are not correspondingly high in man. Urethane has an added advantage, however, of being tolerated in the young and the aged. The object of sedation is not to induce sleep but to restore a relative calm; however, the proper dosage in the presence of poisoning may be so large that it would induce anesthesia if poisoning were not present.

Calcium gluconate has been used less than the other antidotes, but it is reported to control DDT-induced convulsions in several animals. Since its mechanism

of action is entirely different, it may be used in addition to sedatives. Epinephrine is contraindicated.
For further information see Vol. 1, No. 3 of *DPIM Report.*

DEACETYLCEPHALOTHIN SODIUM SALT

NIOSH #: XI 0383500
mf: $C_{14}H_{13}N_2O_5S_2 \cdot Na$; mw: 376.40

SYN: DESACETYLCEPHALOTHIN SODIUM

TOXICITY DATA:	1	CODEN:
ipr-rat LD50:8877 mg/kg		JJANAX 28,81,75
ivn-rat LD50:6116 mg/kg		JJANAX 28,81,75
ipr-mus LD50:8754 mg/kg		JJANAX 28,81,75
ivn-mus LD50:6600 mg/kg		JJANAX 28,81,75

THR: LOW ipr, ivn.
Disaster Hazard: When heated to decomp it emits very tox fumes of SO_x and NO_x.

DEACETYL-HT-2 TOXIN

CAS RN: 34114-98-2 NIOSH #: YD 0105000
mf: $C_{19}H_{30}O_7$; mw: 370.49

SYNS:
12,13-EPOXY-3-ALPHA,4-BETA,8-ALPHA,15-TETRAHYDROXY TRICHOTHEC-9-ENE-8-ISOVALERATE
3-ALPHA,4-BETA,15-TRIHYDROXY-8-ALPHA (3-METHYLBUTYRYLOXY)-12,13-EPOXYTRICHOTHEC-9-ENE

TOXICITY DATA:	3	CODEN:
orl-ckn LD50:30180 ug/kg		AEMIDF 35,636,78

THR: HIGH orl.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

DEACETYLMULDAMINE

CAS RN: 36069462 NIOSH #: QG 1360000
mf: $C_{27}H_{46}NO_2$; mw: 416.74

TOXICITY DATA:	3	CODEN:
orl-ham TDLo:150 mg/kg (7D preg)		JAFCAU 26,561,78

THR: HIGH orl.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

2-DEAMINOACTINOMYCIN D

CAS RN: 10118328 NIOSH #: AU 1595000
mf: $C_{62}H_{85}N_{11}O_{16}$; mw: 1240.0

TOXICITY DATA:	CODEN:
dnd-mam:lym 5200 nmol/L	JMCMAR 20,1055,77

THR: MUT data.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

7-DEAZAINOSINE

CAS RN: 2862160 NIOSH #: UY 9450000
mf: $C_{11}H_{13}N_3O_5$; mw: 267.27

TOXICITY DATA:	3	CODEN:
orl-rat LD50:26 mg/kg		CNREA8 29,116,69
ipr-rat LD50:25 mg/kg		CNREA8 29,116,69
scu-rat LD50:24 mg/kg		CNREA8 29,116,69
ipr-mus LD50:30 mg/kg		CNREA8 29,116,69
orl-dog LDLo:48 mg/kg		CNREA8 29,116,69
ivn-dog LDLo:48 mg/kg		CNREA8 29,116,69

THR: HIGH orl, ipr, scu, ivn.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

DECABORANE(14)

CAS RN: 17702419 NIOSH #: HD 1400000
mf: $B_{10}H_{14}$; mw: 122.24

Colorless needles. mp: 99.7°, d: 0.94. (solid), d: 0.78 (liquid @ 100°), vap. press: 19 mm @ 100°.

SYN:
DECABORANE (DOT) BORON HYDRIDE

TOXICITY DATA:	3-2	CODEN:
orl-rat LD50:64 mg/kg		MLSR** No.8,51
ihl-rat LC50:46 ppm/4H		AMIHAB 17,362,58
skn-rat LD50:740 mg/kg		AMIHAB 11,132,55
ipr-rat LD50:23 mg/kg		AMIHBC 8,335,53
orl-mus LD50:40 mg/kg		AMIHAB 11,132,55
ihl-mus LC50:12 ppm/4H		NTIS** AD224-006
ipr-mus LD50:32 mg/kg		AMIHAB 11,132,55
ipr-dog LDLo:10 mg/kg		AMRL** TR-65-49
skn-rbt LD50:71 mg/kg		AMIHAB 11,132,55
ipr-rbt LD50:28 mg/kg		AMIHBC 8,335,53

TLV: Air: 0.05 ppm DTLVS* 4,118,80. OSHA Standard: Air: TWA 300 ug/m3 (skin) (SCP-Q) FEREAC 39,23540,74. DOT: Flammable Solid, Label: Flammable Solid and Poison FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FEREAC 45,13646,80. AIHQA5 16,280,55.
THR: HIGH orl, ihl, ipr, skn. MOD skn. See also boron compounds and boron hydrides. Self-ignites in O_2.
Disaster Hazard: When heated to decomp it emits tox fumes of B oxides.
Incomp: ethers, halocarbons; O_2 @ 100°; dimethyl sulfoxide.
For further information see Vol. 1, No. 8 of *DPIM Report.*

1,1a,3,3a,4,5,5a,5b,6-DECACHLOROOCTAHYDRO-2-HYDROXY-1,3,4-METHENO-1H-CYCLOBUTA(c,d)-PENTALENE-2-LEVULINIC ACID, ETHYL ESTER

CAS RN: 4234791 NIOSH #: PC 8400000
mf: $C_{17}H_{12}Cl_{10}O_4$; mw: 634.79

SYNS:
GC-9160 KELEVAN

TOXICITY DATA:	3	CODEN:
orl-rat LD50:255 mg/kg		BESAAT 15,96,69
orl-dog LD50:400 mg/kg		BESAAT 15,96,69
skn-rbt LD50:188 mg/kg		BESAAT 15,96,69

Toxicology Review: RREVAH 63,45,76.

POLYVINYL SULFATE, POTASSIUM SALT

CAS RN: 26837423 NIOSH #: TR 8400000

SYNS:
POTASSIUM SALT OF POLYVINYL SULFATE
PVSK

TOXICITY DATA: 3 CODEN:
ipr-mus LD50:225 mg/kg CRSBAW 166,121,72
scu-mus LD50:78 mg/kg OSDIAF 5,128,56

Reported in EPA TSCA Inventory, 1980.
THR: HIGH ipr, scu.
Disaster Hazard: When heated to decomp it emits tox fumes of SO_x and K_2O.

PONDINIL

CAS RN: 5586878 NIOSH #: SH 2100000
mf: $C_{12}H_{18}ClN \cdot ClH$; mw: 248.22

SYNS:
N-(3-CHLOROPROPYL)-ALPHA-METHYLPHENETHYLAMINE HYDROCHLORIDE
N-(3-CHLORPROPYL)-1-METHYL-2-PHENYL-AETHYLAMIN-HYDROCHLORID (GERMAN)

TOXICITY DATA: 3 CODEN:
orl-rat LD50:410 mg/kg ARZNAD 19,748,69
ivn-rat LD50:35 mg/kg ARZNAD 19,748,69
orl-mus LD50:230 mg/kg ARZNAD 19,748,69
ipr-mus LD50:144 mg/kg 27ZQAG -,356,72
scu-mus LD50:180 mg/kg ARZNAD 19,748,69
ivn-mus LD50:49 mg/kg 27ZQAG -,356,72
orl-rbt LD50:236 mg/kg 27ZQAG -,356,72

THR: HIGH orl, ivn, ipr, scu.
Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x, HCl and Cl^-.

PORTLAND CEMENT

CAS RN: 65997151 NIOSH #: VV 8770000

Containing less than 1% crystalline Silica (FEREAC 39,23540,74)

SYN: PORTLAND CEMENT SILICATE

TOXICITY DATA: CODEN:
Threshold Limit Value: Air: 30 mppcf DTLVS* 4,345,80. OSHA Standard: Air: TWA 50 mppcf (SCP-S)-FEREAC 39,23540,74. Reported in EPA TSCA Inventory, 1980.
THR: See also silicates.

POTASAN

CAS RN: 299-45-6 NIOSH #: GN 7525000
mf: $C_{14}H_{17}O_5PS$; mw: 328.34

Crystals, weak aromatic odor. mp: 38°; bp: 210° @ 1 mm; d: 1.260 @ 38°/4°.

SYNS:
DIETHOXY THIOPHOSPHORIC ACID ESTER OF 7-HYDROXY-4-METHYL COUMARIN
O,O-DIETHY 0-4-METHYL-COUMARIN-7-YL)MONO-THIOPHOSFAAT (DUTCH)
O,O-DIETHYL-0-(4-METHYL-7-COUMARINYL)PHOSPHORO-THIOATE
7-HYDROXY-4-METHYL COUMARIN, O-ESTER WITH O,O,DIETHYL PHOSPHORO-THIOATE
4-METHYL-7-HYDROXY COUMARIN DIETHOXYTHIOPHOSPHATE
PHOSPHOROTHIOIC ACID, O,O, DIETHYL O-(4-METHYL-2-OXO-2H-1-BENZOPYRAN-7-YL) ESTER (9CI)

TOXICITY DATA: 3 CODEN:
orl-rat LD50:19 mg/kg JPETAB 105,156,52
ipr-rat LD50:15 mg/kg AMIHBC 6,9,52
unk-rat LD50:19 mg/kg 30ZDA9 -,340,71
orl-mus LD50:99 mg/kg JPETA8 105,156,52
scu-mus LD50:25 mg/kg PAREAQ 11,636,59
skn-rbt LD50:300 mg/kg WRPCA2 9,119,70
orl-gpg LD50:25 mg/kg JPETAB 105,156,52

Toxicology Review: PMDCAY 10,85,74
THR: HIGH orl, ipr, unk, scu and dermal. See also parathion.
Disaster Hazard: Dangerous; see parathion.

POTASSIUM

CAS RN: 7440097 NIOSH #: TS 6460000
af: K; aw: 39.10

Soft ductile, silvery-white, very reactive metal. mp: 63.65°, bp: 774°, d: 0.862 @ 20°.

SYN: POTASSIUM, METAL (DOT)

TOXICITY DATA:
DOT: Flammable Solid, Label: Flammable Solid and Dangerous When Wet FEREAC 41,57018,76. "NIOSH Manual of Analytical Methods" Vol 5 173#. Reported in EPA TSCA Inventory, 1980.
THR: The toxicity of potassium compounds is almost always that of the anion.
Fire Hazard: Dangerous. Metallic potassium reacts with moisture to form potassium hydroxide and hydrogen. The reaction evolves much heat, causing the potassium to melt and spatter. It also ignites the hydrogen, which burns, or—if there is any confinement—an explosion can occur. Burning potassium is difficult to extinguish; dry powdered soda ash or graphite or special mixtures of dry chemical are recommended. It can ignite spont in moist air.
Explosion Hazard: It reacts violently with the following materials under required conditions of temp., pressure, state of division: C_2H_2, air, (moist air), $AlBr_3$, metallic halides, ammonium chlorocuprate, NH_4Br, NH_4I, $[(NH_4)_2SO_4 + NH_4NO_3]$, Sb and As halides, $(AsH_3 + NH_3)$, Bi_2O_3, boric acid, BBr_3, Br_2, C, CO_2, CS_2, $(CO + O_2)$, CCl_4, charcoal, chlorinated hydrocarbons, Cl_2, ClO, ClF_3, $CHCl_3$, $CrCl_4$, CrO_3, Cu_2OCl_2, CuO, dichloromethane, ethylene oxide, F_2, graphite, (graphite + air), I, (graphite + K_2O_2), HI, H_2O_2, IBr, ICl, IF_5, Pb_2OCl_2, PbO_2, $PbSO_4$, maleic anhydride, Hg_2O, CH_3Cl, MoO_3, NO_2, P_2NF, peroxides, $COCl_2$, $(PH_3 + NH_3)$, P, PCl_5, P_2O_5, PBr_3, PCl_3, potassium chlorocuprate, K oxides, KO_3, K_2O_2, KO_2, Se, $SeOCl_2$, $SiCl_4$, $AgIO_3$, $NaIO_3$, $(NH_3 + NaNO_2)$, Na_2O_2, $(SnI_4 + S)$, SnO_2, S, SBr_2, SCl_2, Te, tetrachloroethane, thiophosphoryl fluoride, $VOCl_2$, H_2O. Potassium metal will form the peroxide (K_2O_2) and the superoxide (KO_3 or K_2O_4) at room temp. even when stored under mineral oil. Metal which has oxidized on storage under

oil may explode violently when handled or cut. Oxide-coated potassium should be destroyed by burning.
Disaster Hazard: Dangerous; a highly reactive alkali metal. See sodium and lithium. In the presence of moist air it can spont catch fire and burn with great intensity. It may even explode. Reacts violently with moisture, acid fumes and oxidizers.

POTASSIUM (LIQUID ALLOY)

CAS RN: 7440097 NIOSH #: TS 6465000

SYN: POTASSIUM, METAL LIQUID ALLOY (DOT)

TOXICITY DATA:
DOT: Flammable Solid, Label: Flammable Solid and Dangerous When Wet FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980.
THR: See potassium.
Disaster Hazard: When heated to decomp it emits tox fumes of K_2O.

POTASSIUM ACETATE

CAS RN: 127082 NIOSH #: AJ 3325000
mf: $C_2H_3O_2 \cdot K$; mw: 98.15

White powder; mp: 292°; d: 1.8 @ 20°/20°.

SYN: DIURETIC SALT

TOXICITY DATA: 2 CODEN:
orl-rat LD50:3250 mg/kg AIHAAP 30,470,69

Reported in EPA TSCA Inventory, 1980.
THR: MOD orl.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

POTASSIUM ACETYLIDE

mf: C_2HK; mw: 64.13

THR: No tox data. Will hydrolyze to KOH which is very caustic, irr. See also potassium hydroxide.
Disaster Hazard: When heated to decomp it emits tox fumes of K_2O.
Incomp: Chlorine; non-metal oxides.

POTASSIUM ACID FLUORIDE

CAS RN: 7789299 NIOSH #: TS 6650000
mf: $FK \cdot FH$; mw: 78.11

Colorless crystals; mp: decomp.

SYNS:
BIFLUORURE DE POTASSIUM (FRENCH)
POTASSIUM BIFLUORIDE
POTASSIUM HYDROGEN FLUORIDE

TOXICITY DATA: 3 CODEN:
Toxicology Review: AMSSAQ 400,5,63. Occupational Exposure to Inorganic Fluorides recm std: Air: TWA 2.5 mg(F)/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.
THR: HIGH. A poison. Very reactive, corrosive. Attacks skn, eyes, mu mem. See also fluorides.
Disaster Hazard: When heated to decomp it emits tox fumes of F^-.

POTASSIUM ACID FLUORIDE (SOLUTION)

CAS RN: 7789299 NIOSH #: TS 6655000

SYNS:
POTASSIUM BIFLUORIDE SOLUTION (DOT)
POTASSIUM HYDROGEN FLUORIDE SOLUTION (DOT)

TOXICITY DATA: 3
DOT: Corrosive Material, Label: Corrosive FEREAC 41,57018,76. Occupational Exposure to Inorganic Fluorides recm std: Air: TWA 2.5 mg(F)/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.
THR: HIGH. A poison. Very corrosive and reactive. Attacks living tissue. See also fluorides and hydrofluoric acid.
Disaster Hazard: When heated to decomp it emits tox fumes of F^- and HF.

POTASSIUM AMALGAM

Silvery liquid or solid. K + Hg.

THR: HIGH. See potassium and mercury.
Fire Hazard: Mod, by spont chemical reaction; on contact with moisture, hydrogen is liberated. See also potassium.
Explosion Hazard: Mod; liberates hydrogen upon contact with moisture, acids, etc. See also potassium.
Disaster Hazard: Dangerous; when heated to decomp it emits highly tox fumes of Hg and PO_x; will react with water, steam or acids to produce hydrogen; can react with oxidizing materials.

POTASSIUM AMIDE

mf: H_2KN; mw: 16.02

THR: No tox data. See also potassium hydroxide, ammonia which are hydrolysis products of KNH_2.
Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x, NH_3 and K_2O.
Incomp: Potassium nitrite; water.

POTASSIUM-4'-AMINOPHENYL-AZOPHENYLSULFATE

NIOSH #: WS 5800000
mf: $C_{12}H_{10}N_3O_4S \cdot K$; mw: 331.3

SYN: SULFURIC ACID, P-((P-AMINOPHENYL)AZO)PHENYL ESTER, POTASSIUM SALT

TOXICITY DATA: CODEN:
mma-sat 500 nmol/plate CALEDQ 8,71,79

THR: MUT data. See also sulfates.
Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and SO_x.

POTASSIUM ARSENITE

CAS RN: 10124502 NIOSH #: CG 3800000
mf: $AsH_3O_3 \cdot xK$; mw: 399.65

SMOKELESS POWDER

Nitrocellulose containing about 13.1% nitrogen produced by blending material of somewhat lower (12.6%) and slightly higher (13.2%) nitrogen content, converting to a dough with alcohol-ether mixture, extruding, cutting and drying to a hard horny product. Small amounts of stabilizers (amines) and plasticizers are usually present, as well as various modifying agents (nitrotoluene, nitroglycerine, salts). See also nitrocellulose and explosives, high.

SNAKEROOT OIL CANADIAN

CAS RN: 8016691 NIOSH #: VX 8125000

Consists of Linalool, Geraniol, 1-alpha-terrineol, eugenol and methyl eugenol (FCTXAV 16,637,78)

SYN: WILD GINGER OIL

TOXICITY DATA: CODEN:
orl-rat LD50:4480 mg/kg FCTXAV 16,637,78

Reported in EPA TSCA Inventory, 1980.

THR: LOW orl. See also constituents as listed above.

Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

SODA LIME, (SOLID)

CAS RN: 8006288 NIOSH #: VW 0550000

White to gray granules. Rapidly deteriorates on exposure to air.

TOXICITY DATA:

DOT: Corrosive Material, Label: Corrosive FEREAC 41,57018,76.

THR: No data. A corrosive material irr to skn, eyes, mu mem. See also sodium hydroxide and lime, i.e., CaO + 5-20% NaOH contg 6-18% H_2O.

SODIUM

CAS RN: 7440235 NIOSH #: VY 0686000
af: Na; aw: 22.99

Light, soft, ductile, malleable, silver-white metal. mp: 97.81°, bp: 881.4°, d: 0.9710 @ 20°, autoign. temp.: > 115° in dry air, vap. press: 1.2 mm @ 400°.

SYNS:
NATRIUM SODIUM METAL (DOT)

TOXICITY DATA: 3

DOT: Flammable Solid, Label: Flammable Solid and Dangerous When Wet FEREAC 41,57018,76. "NIOSH Manual of Analytical Methods" VOL 5 173#. Reported in EPA TSCA Inventory, 1980.

THR: Sodium in elemental form is highly reactive, particularly with moisture, with which it reacts violently and therefore attacks living tissue. Also, Na + HOH yields NaOH. See also sodium hydroxide. Metallic sodium reacts exothermally with the moisture of body or tissue surfaces, causing thermal and chemical burns due to the reaction with sodium and the sodium hydroxide formed.

Fire Hazard: Dangerous, when exposed to heat and moisture. In dry air it reacts very slowly up to 550° or by chemical reaction with moisture, air, $AlBr_3$, $AlCl_3$, AlF_3, NH_4 chlorocuprate, NH_4NO_3, $SbBr_3$, $SbCl_3$, SbI_3, $AsCl_3$, AsI_3, $BiBr_3$, $BiCl_3$, BiI_3, Bi_2O_3, BBr_3, bromoazide, CO_2, (CO + NH_3), CCl_4, Cl_2, ClF_3, $CrCl_4$, CrO_3, CoBr, CoCl, $CuCl_2$, CuO, $FeBr_3$, $FeCl_3$, $FeBr_2$, $FeCl_2$, FeI_2, hydrazine hydrate, H_2O_2, H_2S, HCl, HF, F_2, 1,2-dichloroethylene, dichloromethane, Br_2, hydroxylamine, iodine, iodine monochloride, iodine pentafluoride, lead oxide, maleic anhydride, manganous chloride, mercuric bromide, mercuric chloride, mercuric fluoride, mercuric iodide, mercurous chloride, mercurous oxide, methyl chloride, molybdenum trioxide, monoammonium phosphate, nitric acid, nitrogen peroxide, nitrosyl fluoride, nitrous oxide, phosgene, phosphorus, phosphorous pentafluoride, phosphorus pentoxide, phosphorus tribromide, phosphorus trichloride, phosphoryl chloride, potassium oxides, potassium ozonide, potassium superoxide, selenium, silicon tetrachloride, silver bromide, silver chloride, silver fluoride, silver iodide, sodium peroxide, stannic chloride, (stannic iodide + sulfur), stannic oxide, stannous chloride, sulfur, sulfur dibromide, sulfur dichloride, sulfur dioxide, sulfuric acid, tellurium, tetrachloroethane, thallous bromide, thiophosphoryl bromide, trichlorethylene, vanadium pentachloride, vanadyl chloride, zinc bromide, or any oxidizing material, decomp moisture to evolve hydrogen and heat; reacts exothermally with the halogens, acids and halogenated hydrocarbons. Heated sodium is spont flam in air. Can be safely stored under liquid hydrocarbons.

Spontaneous Heating: No.

Explosion Hazard: Dangerous, when exposed to moisture in any form! Keep dry at all times!

Disaster Hazard: Dangerous; when heated in air, emits tox fumes of sodium oxide; will react with water or steam to produce heat, hydrogen, and flam vapors; can react vigorously to explosively with oxidizing materials. See hydrogen.

To Fight Fire: Soda ash, dry sodium chloride or graphite, in order of preference.

Storage and Handling: In the absence of moisture, oxygen or halides, sodium is safe to handle. As to indoor storage of drums, the important thing in storing sodium is that the storage area must be kept dry, since explosions may result from the contact of sodium with water. No automatic sprinkler system, or water or steam pipes containing water should be allowed in the room. Sufficient heat should be provided (without the use of open flames) to prevent condensation of moisture in the room due to changes in atmospheric conditions. Empty sodium drums should be stored in this same area.

Fire extinguishers (preferably color-coded) must be provided in the storage area, but only those containing sodium chloride, sodium carbonate, or graphite may be used. Pails are adequate for storing extinguishant if special care is taken to insure that the materials are

dry. Water, carbon dioxide, carbon tetrachloride, soda-acid, or conventional dry chemical (bicarbonate) extinguishers must be avoided, and signs should be posted in the storage area warning against their use.

Only that amount of sodium immediately needed should be removed from the storage area. Sodium should not be withdrawn for intermediate storage in reaction areas. A special metal container with a tight fitting cover should be used for transporting sodium bricks to other plant areas, once they have been removed from the original container.

Large-scale outdoor storage tanks such as tank cars are unloaded after melting the sodium by circulating hot oil and withdrawing the molten sodium by vacuum to storage tanks similar in construction to sodium tank cars. Although steam may be used to heat the circulating oil, for use on both tank cars and storage tanks, steam must not be used directly as the heating agent for sodium tanks.

For further information see Vol. 1, No. 8 of *DPIM Report.*

SODIUM (LIQUID ALLOY)

CAS RN: 7440235 NIOSH #: VY 0688000

SYN: SODIUM, METAL LIQUID ALLOY (DOT)

TOXICITY DATA:

DOT: Flammable Solid, label: Flammable Solid and Dangerous When Wet FEREAC 41,57018,76.

THR: See also sodium.

SODIUM, (SOLUTION)

CAS RN: 7440235 NIOSH #: VY 0690000

SODIUM DISPERSIONS. Finely divided metallic sodium suspended in toluene, xylene, naphtha, kerosene, etc.

SYN: SODIUM, METAL DISPERSION IN ORGANIC SOLVENT

TOXICITY DATA: 3

DOT: Flammable Solid, Label: Flammable Solid and Dangerous When Wet FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980.

THR: HIGH. See sodium and individual dispersant.

Fire Hazard: Dangerous, when exposed to heat or flame or by chemical reaction. These are very reactive forms of sodium, which if carelessly handled may catch fire. To extinguish, see sodium. After sodium has been extinguished, the burning organic vapor can be dealt with by very cautious use of a carbon dioxide extinguisher. Do *not* use carbon tetrachloride.

Explosion Hazard: Mod, by chemical reaction. See also sodium.

Disaster Hazard: Dangerous; when heated, it loses the solvent and emits highly tox fumes of sodium, sodium oxide, etc.; will react with water or steam to produce heat and hydrogen; on contact with oxidizing materials, can react vigorously, and on contact with acid or acid fumes, can emit tox fumes.

SODIUM ACETARSONE

CAS RN: 5892488 NIOSH #: CF 8750000
mf: $C_8H_9AsNO_5 \cdot Na$; mw: 297.09

SYN: N-ACETYL-4-HYDROXY-M-ARSANILIC ACID SODIUM SALT

TOXICITY DATA:	3	CODEN:
orl-cat LDLo: 125 mg/kg		PSEBAA 27,267,30
orl-rbt LDLo: 150 mg/kg		PSEBAA 27,267,30
orl-gpg LDLo: 100 mg/kg		PSEBAA 29,125,31

OSHA Standard: Air: TWA 500 ug(As)/m3 FEREAC 39,23540,74.

THR: HIGH orl. See also arsenic compounds.

Disaster Hazard: When heated to decomp it emits very tox fumes of As and NO_x.

SODIUM ACETATE

CAS RN: 127093 NIOSH #: AJ 4375000
mf: $C_2H_3O_2 \cdot Na$; mw: 82.04

White crystals, sol in water. autoign. temp.: 1125°F. d: 1.45; mp: 58°. Decomp @ higher temp.

SYNS:

ANHYDROUS SODIUM ACETATE
NATRIUMACETAT (GERMAN)

TOXICITY DATA:	2-1	CODEN:
orl-mus LD50: 6891 mg/kg		JIHTAB 23,78,41
skn-rbt 500 mg/24H MLD		BIOFX* 19-3/71
eye-rbt 10 mg MLD		BIOFX* 19-3/71
orl-rat LD50: 3530 mg/kg		FAONAU 40,127,67
orl-mus LD50: 4960 mg/kg		JIHTAB 23,78,41
scu-mus LD50: 8000 mg/kg		ZGEMAZ 113,536,44
ivn-mus LD50: 335 mg/kg		JLCMAK 29,809,44
ivn-rbt LDLo: 1300 mg/kg		AEXPBL 21,119,1886

Reported in EPA TSCA Inventory, 1980. EPA TSCA 8E No: 04780120—Followup Sent as of April, 1979.

THR: A skn, eye irr. HIGH ivn. MOD orl, ivn; LOW orl, scu. Used as a general-purpose food additive. It is a substance which migrates to food from packaging materials. Violent reaction with F_2, KNO_3, diketene.

SODIUM ALGINATE

CAS RN: 9005383 NIOSH #: AZ 5820000
mf: $(C_6H_7O_6Na)_x$; mw: 32000-250,000

Colorless to slight yellow filamentous or granular solid or powder. In H_2O it forms a viscous colloidal sol; not sol in ether, alc, chloroform.

SYNS:

ALGIN (POLYSACCHARIDE)
ANTIMIGRANT C 45
PECTALGINE
SNOW ALGIN L

TOXICITY DATA:	3-2	CODEN:
ivn-rat LD50: 1000 mg/kg		FAONAU 53A,382,74
ivn-mus LD50: 200 mg/kg		FAONAU 53A,382,74
ipr-cat LD50: 250 mg/kg		FAONAU 53A,382,74
ivn-rbt LD50: 100 mg/kg		FAONAU 53A,382,74

Reported in EPA TSCA Inventory, 1980.

THR: HIGH ivn, ipr; MOD ivn. A stabilizer food additive.

Disaster Hazard: When heated to decomp it emits acrid smoke.

RECORD OF COMMUNICATION	Ref. 9 [X] Phone Call [ ] Discussion [ ] Field Trip [ ] Conference [ ] Other (Specify) (Record of Item Checked Above)	
TO: Rickey Hennigan Operator, Harris County WC&ID #21 713-452-0211	FROM: Victor Cason ICF - FIT 214-744-1641	DATE 3/6/89 TIME 1105

SUBJECT Population served by well in water district #21.

SUMMARY OF COMMUNICATION

Mr. Hennigan stated that one well is near Sheldon Road and one well is near the Cedar Lane and I-10 intersection. The wells correspond to 65-16-403 and 65-16-702 in Report 178 of the Texas Water Development Board. Mr. Hennigan stated that approximately 10,000 people are serviced by the wells.

Victor Cason

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES TO:

EPA Form 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 Which May Be Used Until Supply is Exhausted.

RECORD OF COMMUNICATION	Ref. 10 [X] Phone Call [ ] Discussion [ ] Field Trip [ ] Conference [ ] Other (Specify) (Record of Item Checked Above)	
TO: Steve Early Operator, Harris County WD #6 713-452-2232	FROM: Victor Cason ICF - FIT 214-744-1641	DATE 3/6/89 TIME 1030

SUBJECT Population served by well in water district #6.

SUMMARY OF COMMUNICATION

Mr. Early stated that he operates three wells near Market Street and Sheldon Road in Channelview, TX. His wells correspond to well 65-16-707 65-16-714 in Report 178 of the Texas Water Development Board. The third well is not listed in the above report. The numbering system used by Mr. Early labels the wells as 640, 641 and 3991. He stated that approximately 2500 - 3000 people were serviced by the wells. Mr. Early told me that the water districts were in a process of converting over to surface water soon.

Victor Cason

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES TO:

EPA Form 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 Which May Be Used Until Supply is Exhausted.

PREFACE

U.S. DEPARTMENT OF COMMERCE
Luther H. Hodges, Secretary

WEATHER BUREAU
F. W. Reichelderfer, Chief

TECHNICAL PAPER NO. 40

RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

NOTICE
Rainfall-frequency information for durations of 1 hour and less for the Central and Eastern States has been superseded by NOAA Technical Memorandum NWS HYDRO-35 Five to Sixty-Minute Precipitation Frequency for the Eastern and Central United States. This publication (Accession No. PB 272-112/AS) is obtainable from:

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

8011

WASHINGTON, D.C.
May 1961

THIS ATLAS IS OBSOLETE FOR THE FOLLOWING 11 WESTERN STATES: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

NOAA ATLAS 2: PRECIPITATION-FREQUENCY ATLAS OF THE WESTERN UNITED STATES (GPO: 11 Vols., 1973) supersedes the Technical Paper 40 data for these states

All but 3 of the 11 state volumes are out of print, and no reprint is presently planned.

Institutions in the eleven western states likely to have copies of these volumes for their state for public inspection are:

US Department of Agriculture Soil Conservation Service Offices
US Army Corps of Engineers Offices
Selected University Libraries
National Weather Service Offices (may also have volumes for adjacent states).
National Weather Service Forecast Offices (may have all eleven volumes)

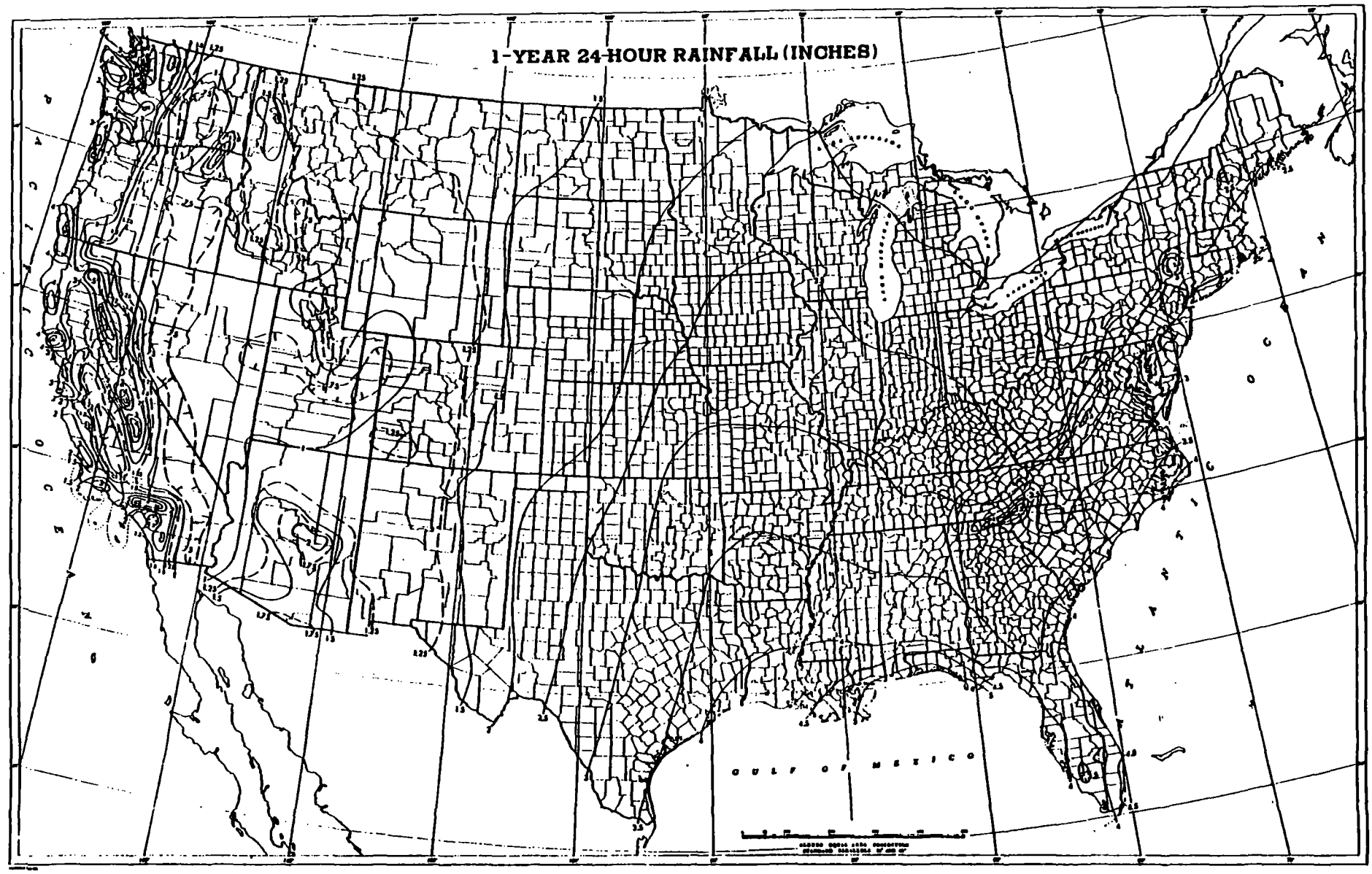
Elsewhere, libraries of universities where hydrology and meteorology degree programs are offered may shelve some of the eleven volumes.

The three volumes in print as of 1 Jan 1983 at the GPO are:

Vol	State	GPO Stock Number	Price
IV	New Mexico	003-017-00158-0	$10.00
VI	Utah	003-017-00160-1	12.00
VII	Nevada	003-017-00161-0	9.50

The GPO Order number is 202-783-3238 for VISA and MASTERCARD orders which

Ref. 11


1-YEAR 24-HOUR RAINFALL (INCHES)
GULF OF MEXICO

RECORD OF COMMUNICATION	Ref. 12 [X] Phone Call [ ] Discussion [ ] Field Trip [ ] Conference [ ] Other (Specify) (Record of Item Checked Above)	
TO: Jim Rice TWC, Deer Park 713-479-5981	FROM: Victor Cason ICF - FIT 214-744-1641	DATE 2/17/89 TIME 1535

SUBJECT Uses of the San Jacinto River.

SUMMARY OF COMMUNICATION

Mr. Rice stated that the San Jacinto River in the area of the site with regards to usage is composed of two sections. Section 1001, north of I-10, is named the San Jacinto River Tidal and has contact recreation, high aquatic life and no domestic water supply uses. Section 1005, south of I-10, is named the San Jacinto River Houston Ship Channel and has these uses: non-contact recreation, high aquatic life and no domestic water supply. There are no water intakes south of the site or north of the site.

Victor Cason

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES TO:

EPA Form 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 Which May Be Used Until Supply is Exhausted.

TEXAS
PARKS AND WILDLIFE DEPARTMENT
4200 Smith School Road Austin, Texas 78744

COMMISSIONERS

CHUCK NASH
Chairman, San Marcos

RICHARD R. MORRISON, III
Vice-Chairman
Clear Lake City

BOB ARMSTRONG
Austin

HENRY C. BECK, III
Dallas

GEORGE R. BOLIN
Houston

DELO H. CASPARY
Rockport

WM. L. GRAHAM
Amarillo

BEATRICE CARR PICKENS
Amarillo

A.R. (TONY) SANCHEZ, JR.
Laredo

CHARLES D. TRAVIS
Executive Director

November 10, 1988

C. Victor Cason
ICF Technology Incorporated
1509 Main Street, Suite 900
Dallas, Texas 75201-4809

Dear Mr. Cason:

In response to your request of November 3, 1988 for information on sensitive species and natural communities within the project area in Harris County, we offer the following comments. A search of the Texas Natural Heritage Program Information System revealed no presently known occurrences of special species or natural communities in the general vicinity of the project.

The Heritage Program information included here is based on the best data currently available to the state regarding threatened, endangered, or otherwise sensitive species. However, the data does not provide a definite statement as to the presence or absence of special species or natural communities within your project area, nor can it substitute for an evaluation by qualified biologists. It is intended to assist you in avoiding harm to species that occur on your site. Please contact the Texas Parks and Wildlife Department's Heritage Program before publishing or otherwise disseminating any specific locality information.

Thank you for contacting us. Please feel free to call me at 512/389-4533 if you have questions.

Sincerely,

Dorinda Sullivan

Dorinda Sullivan, Data Manager
Texas Natural Heritage Program
Resource Protection Division

DLS/ds

Ref. 14

RECORD OF COMMUNICATION

[X] Phone Call [ ] Discussion [ ] Field Trip
[ ] Conference [ ] Other (Specify)

(Record of Item Checked Above)

TO:	FROM:	DATE
Ernest Baker Hydrologist, USGS Austin, TX 512-832-5791	Victor Cason ICF - FIT 214-744-1641	3/14/89 **TIME** 1145

SUBJECT Description of the Alta Loma Sand.

SUMMARY OF COMMUNICATION

Mr. Baker stated that the base of the Alta Loma Sand is approximately 600 feet in the vicinity of the site. The sand is heavily pumped in the area. The upper and lower Chicot aquifers are interconnected. Most wells in the area draw from the Alta Loma Sand since the Evangeline aquifer is slightly salty.

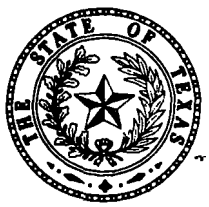
Victor Cason

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES TO:

EPA Form 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 Which May Be Used Until Supply is Exhausted.

TEXAS
WATER
DEVELOPMENT
BOARD



Report 178

GROUND-WATER DATA FOR HARRIS COUNTY, TEXAS VOLUME I DRILLERS' LOGS OF WELLS, 1905-71

November 1973

Well LJ-65-16-714
Owner: Harris County FWD No. 6
Driller: Layne Texas Co.

	THICKNESS (FEET)	DEPTH (FEET)
Surface soil	3	3
Clay	63	66
Shale, sandy	53	119
Sand	49	168
Sand and shale	31	199
Sand	35	234
Shale	24	258
Sand	33	291
Shale, sandy	12	303
Sand	7	310
Shale, sandy	19	329
Sand	121	450
Sand and shale streaks	40	490
Shale, sandy	16	506
Shale	5	511
Shale, sandy	54	565
Sand	13	578
Shale, sandy	4	582
Sand	25	607
Shale, sandy	7	614
Sand and shale streaks	21	635
Shale, sandy	10	645

Well LJ-65-16-715
Owner: Key Oil Co.
Driller: Lowry Water Wells

	THICKNESS (FEET)	DEPTH (FEET)
Clay, red and sand	24	24
Sand and clay	24	48
Clay, white	48	96
Clay, brown	38	134
Sand	10	144
Sand, powder	24	168
Shale, brown	24	192
Sand	35	227
Sand and shale	13	240
Shale, tough	58	298
Sand	16	314
Shale, sandy	16	330
Sand	124	454

Well LJ-65-16-716
Owner: Productions Systems International
Driller: B. J. Swinehart Co.

	THICKNESS (FEET)	DEPTH (FEET)
Clay	18	18
Sand	28	46
Clay	152	198
Sand	14	212
Clay	10	222
Sand	18	240
Clay	25	265
Sand	36	301
Clay	7	308
Sand	14	322
Clay	55	377
Sand	20	397
Sandrock	44	441
Sand	27	468

Well LJ-65-16-717
Owner: Texaco Inc.
Driller: Lowry Water Wells

	THICKNESS (FEET)	DEPTH (FEET)
Surface clay and sand	26	26
Clay, white	23	49
Sand	7	56
Clay, red	86	142
Clay, blue	62	204
Sand	26	230
Shale	3	233

RECORD OF COMMUNICATION	Ref. 16 [X] Phone Call [ ] Discussion [ ] Field Trip [ ] Conference [ ] Other (Specify) (Record of Item Checked Above)	
TO: Jim Rice TWC, Deer Park 713-479-5981	FROM: Victor Cason ICF - FIT 214-744-1641	DATE 3/20/89 TIME 1430

SUBJECT San Jacinto River Tidal

SUMMARY OF COMMUNICATION

Mr. Rice stated that section 1001, San Jacinto River Tidal, does have tidal influence. He stated that sometimes the river is salty all the way to the Houston Lake dam. The area is salty many times a year especially last year when there was little rainfall.

Victor Cason

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA Form 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 Which May Be Used Until Supply is Exhausted.